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FOR THE DRILLING, PRODUCING, PIPE LINE INDUSTRY

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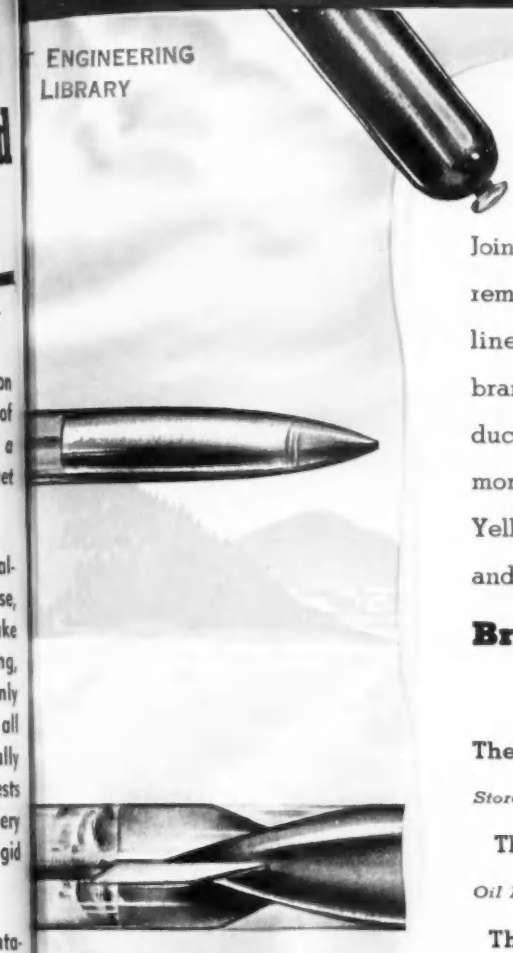

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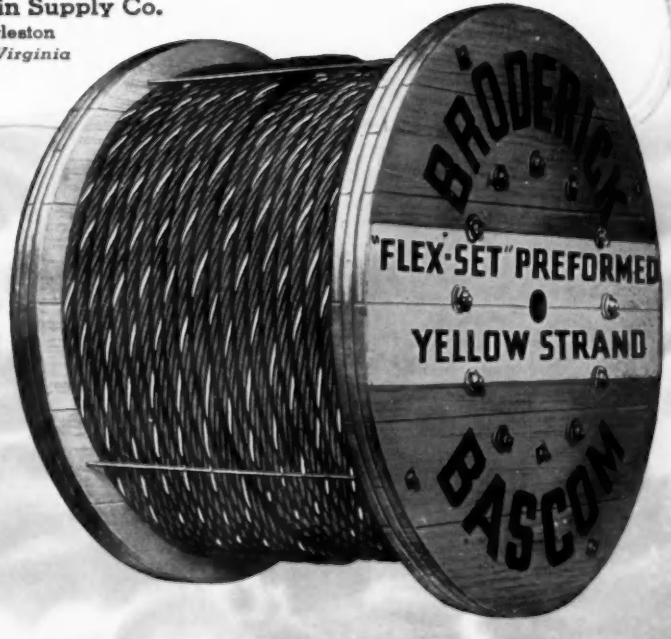

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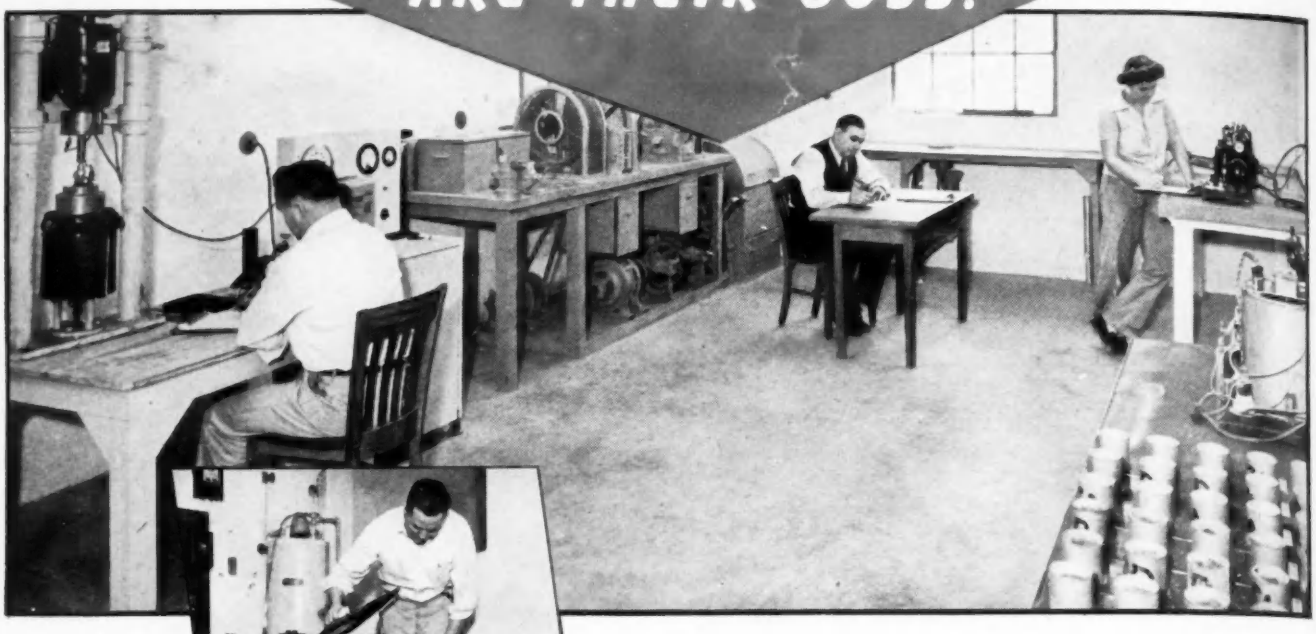

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LOOKING AHEAD
. . . with the Editor

PROGRESS in geophysical exploration during the past 15 years has been as marked as in any other phase of the oil industry, if not more so. So advanced has the science become, that today geophysics takes its place beside geology as a fundamental activity in the search for oil.

With this expanding use of instruments, comes constant revelation of geological secrets locked in the earth, secrets which the geologist has imagined and visioned, but secrets which were hard to discover until the various geophysical instruments proved them.

Not only has exploration benefited by geophysics, but development likewise has been greatly helped. The growth in knowledge of many structures has been based largely on surveys relying on geophysics. Aided by the facts uncovered by the instrument, the operator has been able to develop many oil properties with a minimum of lost effort and a much greater chance for profit than was possible without the instruments.

In the Gulf Coast for instance, growth in knowledge of typical salt domes has been concurrent with the development of the science of geophysics, the successive application of various techniques, and the testing and proving with the drill of what the instruments indicated.

Glen M. McGuckin, Magnolia Petroleum Company, of Dallas, discusses the progress made in the study of a typical salt dome with the history of exploration of the Cameron Meadows dome, Cameron Parish, Louisiana, in an article scheduled soon.

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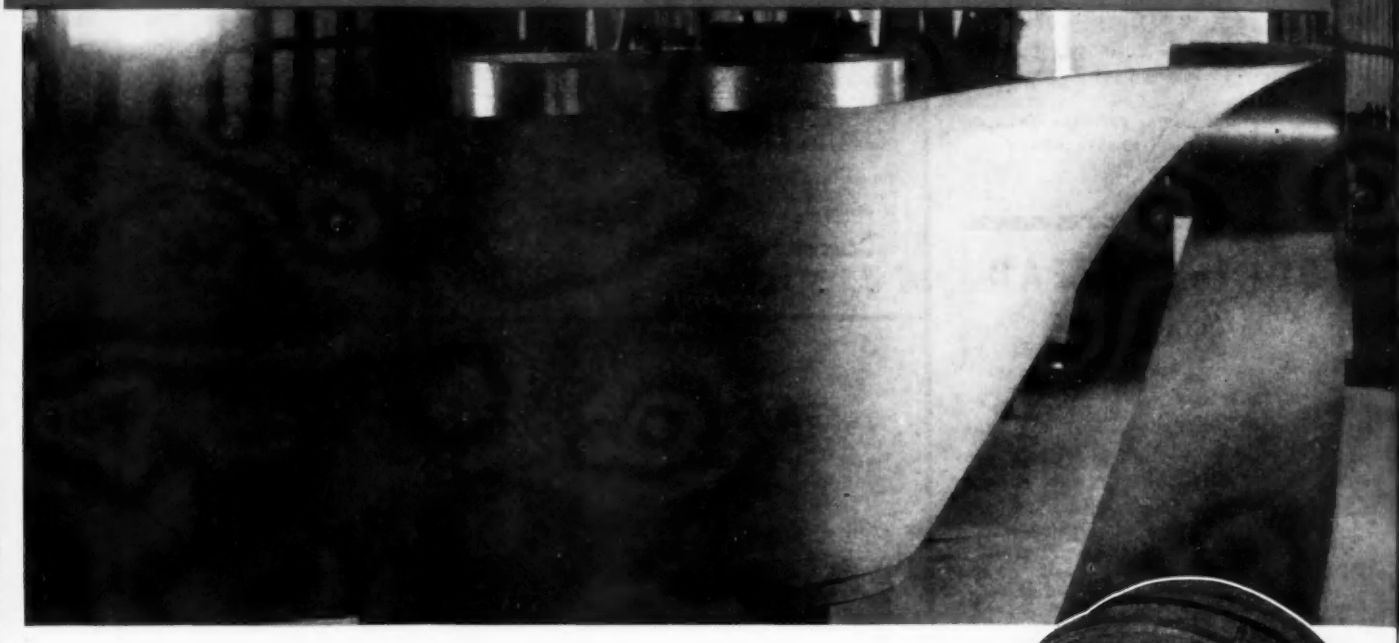
Why it pays to specify
REPUBLIC RUBBER HOSE and BELTING



All hats are off to the amazing achievements of the mechanical rubber and refining industries in the comparatively short time since the War Production Board requested conversion from crude to synthetic rubber.

We share the enthusiasm of countless careful buyers for the specific achievements of Republic Rubber. Republic Hose and Belting now incorporate such unusual oil-and-heat-resisting qualities and surplus strength for overloads and shocks, that what started out to be a war time handicap has come to be an industrial triumph.

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The Changing Panorama

Engine Types and Petroleum Prices

UNDER the impetus of war, great strides have been made in the development of new engine types. These advancements presage postwar prime movers which may be considerably different from prewar ones. While of special importance to refiners, who must adjust their yields to fit consumptive demands, any widespread adoption of new kinds of prime movers also could influence the price of crude oil by making some types more valuable and some less valuable than heretofore.

The development of small, high powered engines that burn high-octane fuel oil has received much publicity because of widespread use in aircraft. It has been freely predicted that such engines will be adopted by automobile manufacturers within a few years.

On the other hand, the war has boosted diesel oil into a sizeable member of the petroleum product family, and it is not likely to give up all its gains when peace comes. Manufacture of diesel engines jumped from 14,000 units in 1937 to 250,000 in 1944. Enlarged manufacturing facilities probably will reduce the initial cost of diesel engines. Makers of diesel engines expect greatly expanded use by railroads, boats, buses, trucks and for stationary industrial power.

Latest prime mover to gain the spotlight is the gas turbine, which has been a sensation in jet-propulsion planes. Makers of gas turbines say this revolutionary engine may drive tomorrow's planes, trains and ships. Present developments limit the gas turbine to the use of relatively high grade fuel oils, but a lot of development admittedly remains to be done and engineers foresee the use of low grade oil, coal or hydrogen as the fuel.

At the moment, the use of higher octane fuel in passenger cars and a more general use of diesel oil engines for heavier industrial duty and for trucks and ships appear most likely. Even these changes may cause a shift in postwar petroleum product prices.

Improved Product

AN IMPROVED type of synthetic rubber is being made from an emulsified soap solution with a base of rosin acid derived from abundant southern pine. The B. F. Goodrich Company's plant in Louisville, Kentucky, has manufactured 10,000 tons of this special variant of GR-S rubber and is producing at the rate of 15,000 tons a year. A plant being put in operation at Port Neches, Texas, will have a like capacity.

This product, sometimes called "rosin soap" rubber, is said to have properties which reduce tread cracking and increase road wear in tires.

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Every day, 35,000,000 gallons of all types of gasoline are furnished the military forces from United States refineries. If you could burn this amount of ordinary gasoline in your car, it would last you and your family down to the 2943rd generation —or 59,000 years.

—RALPH K. DAVIES,
Deputy Petroleum Administrator.

Commercial Uses Seen for Jet Engines

MILITARY jet propulsion engines ranging from a midget the size of a heavy artillery shell to a keg-sized version producing as much power as the largest piston aircraft engine yet built were demonstrated on the test stands recently to a group of eastern aircraft manufacturers and their engineers at Westinghouse Electric Corporation's aviation gas turbine division, South Philadelphia, Pennsylvania.

Under the authority of the Navy, for which Westinghouse developed the first wholly American design of jet propulsion engine, the plane builders had a private engineering preview of the machines that may power postwar airliners and cargo-carriers.

G. H. Woodard, manager of the aviation gas turbine division, told the aviation executives that "as soon as military demand permits, a part of the company's manufacturing facilities will be turned to the production of commercial versions of the present jet engines. These postwar designs, however, will have propellers driven by compact, light-weight gas turbines somewhat similar to those that now produce jet thrust for high-performance military aircraft. Engineering work on these designs, based on the present military engines, is already well under way."

Tax Encouragement For Research Push

TO ATTAIN the postwar goal of full employment, greater use should be made of scientific research. Expansion of research will not only provide more research jobs, but can create new industries that will also provide many jobs.

One method by which expanded research might be encouraged is suggested by Dr. Roger J. Williams, University of Texas scientist, who suggests generous tax exemptions for money spent on research be allowed corporations and individuals.

"If we should spend ten times as much for research as we do, it would be only a fraction of what we will spend for national defense, yet we would be laying a foundation for vast employment for many years to come," declares Williams.

Williams' idea is in line with a recent suggestion of Dr. Vannevar Bush, director of the Office of Scientific Research and Development, which in a report to President Truman has recommended establishment by Congress of a National Research Foundation to cost $35 million per year initially with more needed when it gets under way.

Bush in his announcement (THE OIL WEEKLY, July 23, 1945) points out that if industry is to play a major role in such a research program the laws relating to both taxation and patents would have to be amended.

"Uncertainties as to the attitude of the Bureau of Internal Revenue regarding deduction of research and development expenses are a deterrent to research expenditure and the code should be amended to remove such uncertainties," Bush declared.

Wounded Veterans Also Can Drive

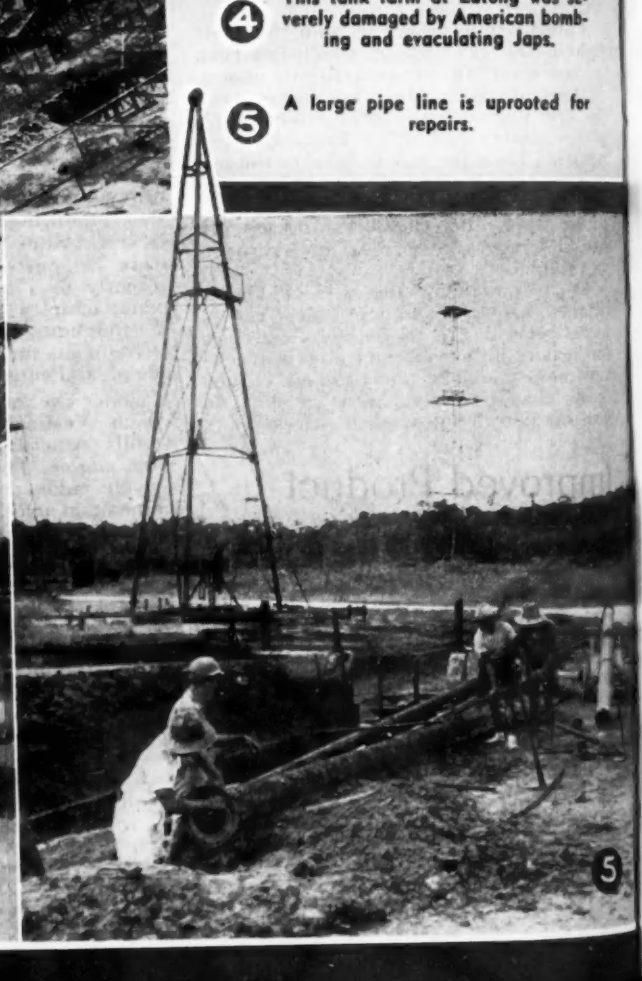
THE desire of wounded war veterans to drive automobiles again is being converted into reality. Prosthetic devices and simple mechanical driving aids will enable even amputees to operate passenger cars and light trucks skillfully and safely.

Prosthetic devices, according to the War Engineering Board of the Society of Automotive Engineers which is analyzing existing driving aids, will enable the majority of the wounded to operate motor vehicles without the aid of special devices.

The unrealistic and arbitrary treatment of the oil industry is a shocking example of the ineptitude of OPA and, in fact, all bureaus, to control and regulate business and industry.

—SENATOR E. H. MOORE,
of Oklahoma.

On the March in Borneo



1. Americans and Australians float drums of gasoline and oil through the surf from landing craft to shore near Lutong.

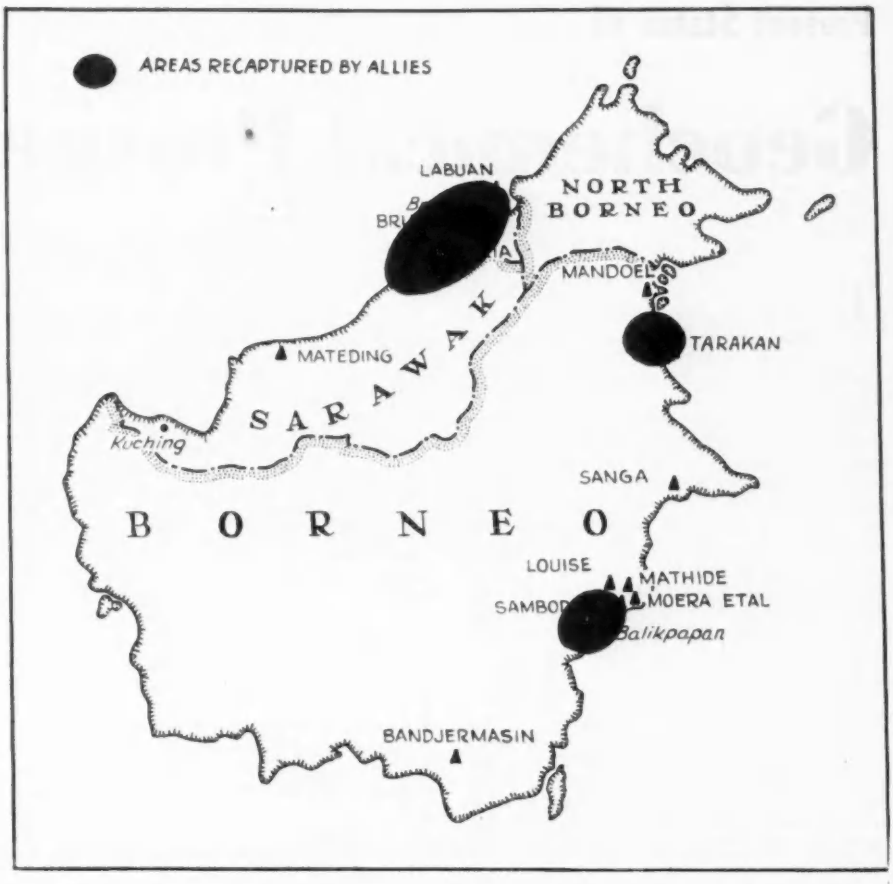
2. Australians move through the Royal Dutch Shell refinery near Balikpapan in mop-up operations.

3. American bombers and Jap demolition squads almost completely wrecked Lutong refineries despite camouflage.

4. This tank farm at Lutong was severely damaged by American bombing and evaculating Japs.

5. A large pipe line is uprooted for repairs.

Battle for Borneo is far from finished but most of island's oil facilities have been reconquered by MacArthur's fighters



SLOUCH-HATTED Australian Diggers of General MacArthur's command last week had virtually completed the task of wrestling from the Japs 35 percent of his oil supply.

The three-pronged strike at Borneo, fabulous island hanging like a fat plum on the lowest reach of the Jap's stolen empire, was militarily far from complete. Thousands of Japs remained to be burned out of their jungle bastions, but in MacArthur's grip was most of the island's three great oil producing centers. (See map.)

Final Blows Near

Beginning with the invasion of Tarakan off the northeast coast in May, the Aussies struck again in the Balikpapan vicinity and again at Sarawak on the northwest coast. By last week the oil in the Tarakan area belonged to the Allies, and the Diggers were probing the Jap's lines for final blows that would clear the other two major fields.

When judged against the tremendous needs of the United Nations' Pacific war machine, the Borneo prize seems less than rich. Pre-war production of all Borneo fields was only 55,000 barrels a day, or less than ¾ of 1 percent of present United Nations requirements of 7 million barrels daily. The Jap was never able to approach even this figure during his three-year occupation. Allied bombings and deliberate slow-down labor tactics practiced by the natives prevented the enemy from lifting production higher than ⅓ of the pre-war figure, Allied experts estimate.

Even this production level has been lowered by Allied air strikes, damage wrought by the retreating Jap, and the artillery of the advancing Aussies. It will take one year and perhaps two to restore full production.

But the value of Borneo's oil is not so much a matter of quantity but of logistics. Fast tankers require 90 days to make a turn-around run from Gulf Coast ports to the Pacific war zone. A 130,000-barrel capacity tanker, therefore, can deliver an average of but 1500 barrels daily, in contrast with the ability to deliver 6000 to 7000 barrels daily to Europe. Hence, Tarakan production of 15,000 barrels daily would be equivalent to a fleet of nine or ten tankers.

Should the Pacific war drag out a year or two, Borneo will become a priceless petroleum reservoir, for in addition to restoring old production, the Allies can look ahead to new oil. The greatest possibilities in Dutch Borneo are in the Barito estuaries, a great marshy region around Bandjermasin, where promising formations have been found. Little is thought of prospects in west Borneo, and the only concessions are in the Singkawang District, north of Pontianak, near the Sarawak border.

Prospects of new fields in British Borneo exist at Muka in Sarawak on the west coast, at Labi in central Brunei, and at Lahad Datu and Tawau, just north of Tarakan.

It can be assumed that reasons other than purely tactical dictated MacArthur's decision to strike first at Tarakan. In addition to being one of the island's most prolific fields with an anual prewar production of 5 million barrels, Tarakan's 500 wells yield petroleum of the heavy, nonwaxy type, with a low viscosity, low coking value, and high flash point. After a simple process to remove sand and water, it can be used as a fuel oil without further refining. United States ships were turning Tarakan's oil into their engines a few weeks after the first Digger hit Tarakan beach.

The Balikpapan and Samarinda areas include two large fields, Sanga Sanga and the Kutei pools. Approximately 400 wells produced about 9½ million barrels of oil in 1940 from wells 1500 to 3300 feet deep.

British Borneo

British Borneo's 7-million-barrel prewar production from 470 wells comprised 34 percent of total Borneo output. The Miri field in Sarawak with wells of shallow depth produced 1,300,000 barrels in 1940. The Seria field along the boundary between Sarawak and Brunei, had an output of 5,700,000 barrels from wells 1800 to 6000 feet deep.

A refinery at Lutong on the north shore of the Miri River in Sarawak processed the crude from both these fields. The Japs found it damaged and reconstructed it, but Liberator bombers made it useless long before MacArthur arrived.

Borneo's largest refinery is at Balikpapan, on the southeast coast. Most of the installations were demolished before the Jap occupied the island in 1942. Restored by the enemy, they were again damaged by Allied bombs and Jap demolition squads.

Well Tamers Wanted

A call has been sent out for experienced United States "Well Tamers" to quench Borneo fires and save the wells.

L. F. McCollum, vice president of Standard Oil Company (New Jersey), has advised officials of The Carter Oil Company at Tulsa, that "The Japs set fire to hundreds of wells in the different pools in Borneo and the number of shooters to combat fires is very small."

Most of the wells now being salvaged are owned by Bataafsche Petroleum Maatschappij of The Hague, in which Shell Oil Company, Standard Oil Company (New Jersey) and Socony-Vacuum Oil Company are interested.

Present Status of

Geochemical Prospecting

By V. G. GABRIEL, Consulting Geophysicist, Los Angeles, California

THE fundamental laws governing the accumulation of petroleum in underground pools were established by Munn, Rich, and their coworkers more than three decades ago.

Both Munn and Rich emphasized the role of the changes in permeability, porosity, changes in the degree of induration and cementation, as an important factor for the accumulation of petroleum in oil reservoirs underground. Because structural oil traps, that is anticlines, salt domes, fault lines, etc., can be more easily detected through detailed study of field geology and the use of certain geophysical methods (seismic, gravitational, electrical), the search for stratigraphic traps or petrographic traps, which is their most modern equivalent, has been neglected. The greater and greater demand for oil, however, coupled with the diminishing probability of discovering structural oil reservoirs in the United States, calls for the application of techniques capable of detecting either petrographic traps or oil directly, or both.

Almost since the beginning of the oil industry, geologists have been able to recognize a few broad features governing the accumulation of petroleum underground: that is, a source-rock, and oil trap, and a somewhat impervious caprock. Under the influence of their observations, the earlier geologists did not believe that a so-called "cap-rock" was absolutely impervious to gas or oil migration through it. Moreover, the observation and detection of oil leakages have been one of the important tools possessed by a geologist for many decades in his quest for oil accumulations. It is of interest to note that, according to Sawtelle, out of 141 salt domes discovered in the Gulf Coast Area prior to 1936, 35 owe their discovery to perceptible gas and oil seepages

In spite of the early recognition of the fact that underground oil accumulations are often manifested through perceptible gas leaks and oil seepages, systematic and persistent study of this phenomena has been neglected up to about 1930. Although it is true that the earliest patents pertaining to soil analysis were obtained by a German in 1921, and in the United States H. E. Minor, in 1924, analyzed near-surface waters for salinity and delineated the subsequently proved Tomball field in the Gulf Coast Area, nevertheless modern geochemical prospecting received its first strong impetus in about 1930. According to Tripp: "In 1930 V. A. Sokolov, a young Russian nuclear physicist, and a coworker, M. G. Gurevitch, devised an apparatus for measuring the minute quantities of gas liberated during the radio-active disintegration of certain elements. The possibility of micro-gas seeps existing over oil reservoirs occurred to them and tests were made at Grozny and Baku with their new apparatus. At about the same time the idea occurred to G. L. Hassler in this country and to G. Laubmeyer in Germany. The work of the three different men consisted in analyzing the free soil gas for hydrocarbon constituents."

Laubmeyer described a method for collecting samples of soil gas from bore holes and analyzing them for methane. Sokolov and his coworkers in USSR, mainly interested in free soil gas analysis, has developed a more detailed technique. By using liquid air, they separated the hydrocarbons into two fractions: 1. Light fraction or methane and ethane; 2. The heavy fraction composed of complex hydrocarbons and their derivatives. According to numerous publications depicting the application of geochemical prospecting in USSR, Sokolov and his coworkers have been able to develop certain empirical postulates which may be conservatively applied in the interpretation of geochemical survey data. According to Jakosky, Sokolov believes that the percentage of heavy hydrocarbons increases over an oil horizon and the percentage of methane generally increases over a gas field; also the rate of light to the heavy hydrocarbon content is assumed therefore to furnish a useful diagnostic tool.

In this country, geochemical prospecting, although at first under the influence of geochemical methods practiced abroad, has been able to develop rapidly new methods and techniques. To understand technical trends prevalent in American geochemical exploration for oil, a brief review of surface manifestations of oil accumulations located underground is necessary.

As it was discussed elsewhere in this article, underground oil accumulations are often manifested by the presence of perceptible gas leakage and oil seepage. This gas usually contains various proportions of light and heavy hydrocarbons (methane, ethane, propane, etc.). However, in addition to gaseous hydrocarbons occurring in quantities ranging from 10 to 10^2 parts in 10^9 parts by weight, the liquid organics ranging from 10^3 to 10^4 parts per 10^8 parts by weight, the solid (waxes) varying from N_110 to N_210^3 parts in 10^6 by weight, the inorganic solids are found in the soil overlying oil accumulations. The inorganic solids comprise halides, sulfates, carbonates, bromides, iodides, etc. Although the mechanism of oil and gas leakages and the laws governing the partial mineralization of the soil overlying oil accumulation are still not well understood, the majority of the American geochemicysts have concentrated their attention on the study of soil samples in their atempt to discover oil accumulations which might be present in the area under investigation.

Among the pioneers of the application of geochemical soil analysis in American oil industry are Rosaire, Horvitz, and McDermott.

Horvitz states in one of his publications, "of the hydrocarbons composing petroleum, only the more volatile ones would be expected to reach the surface of the earth by upward migration from the buried deposit. However, since this compound is usually present in soils as result of bacterial action upon vegetable and animal matter, its determination may be of no special significance . . . For this reason it was essential that an apparatus be developed by means of which a quantitative separation of methane from ethane and heavier hydrocarbons could be effected . . . among the compound determined the presence of hydrogen, methane, ethane, propane, and a group of substances having six to 12 carbon atoms, which has been termed pseudo-hexane . . . The results obtained by this new technique were at first very surprising, for in contrast with the experience reported by Laubmeyer and Sokolov in soil gas prospecting, who observed that maximum hydrocarbons occur in the center of the area overlying production . . . the writer's empirical data . . . the richer concentration in a halo pattern . . . Rosaire explained the halo pattern by the presence of shallow mineralization produced by the deposition of minerals from ground waters . . . Ethane and propane have no known natural source other than petroliferous deposits.

"For this reason the greatest reliability is attached to their presence . . . The determination for significant methane is limited, in general, to areas void of profuse vegetation . . . Analysis for pseudo-hexane is of great value in exploration in West Texas and other areas, where the presence of caliche makes difficult the collection of samples . . . As yet, no reliance has been placed on the presence of hydrogen in the soil . . . Mixtures of liquid and solid materials were found . . . in greatest concentrations in the shallow surface soils immediately surrounding producing structures."

McDermott and his coworkers are basing their soil analysis on certain assumptions different from those believed in by Rosaire, Horvitz, and others. McDermott's postulates or the principles governing soil analysis interpretation are as follows: 1, "Genetically, the subsurface concentration (oil and gas fields) and the near surface concentrations of hydrocarbons are very much the same. Oil shales are included in this category; 3, The saturated hydrocarbons such as methane and ethane result in gas field, whereas the unsaturated hydrocarbons, such as ethylene are synthesized or polymerized to form oil fields; 4, These gases migrate essentially vertically . . . 6, As the permeability of a shale decreases with depth of burial and in regions of deformations, the volatility of the accumulations will increase with depth and in regions of deformations; 7, These gases in migration

TABLE 1—Geochemical Prospecting in the American Oil Industry
Based on published instances of the application of geochemical methods in exploration for oil.

Year of Exploration	Type of Survey and Conducted by	Location	Purpose or Predictions Made	Results Achieved as Depicted by the Authors	Source of Information
1936?.....	Soil Survey? by Geoph. Service, Inc	La Rosa Field, Refugio Co., Texas	Experimental?		"Explor. Geophysics" by J. J. Jakosky
1937.....	Soil Analysis, by S. J. Pirson	Woodhull Gas Field, New York	Experimental	Ethane distribution map	S. J. Pirson, "Oil Weekly" Oct. 10, 1938
1938.....	Soil Survey, by E. E. Rosaire	South Elton Oil Field, Jefferson Par., La.	Experimental	"Halo" of heavy hydrocarbons observed	E. E. Rosaire, "Geophysics" 3 (2), March, 1938.
1938.....	Soil Survey, by E. E. Rosaire	Hastings Field, Brazoria Co., Texas	Experimental	"Halo" observed outside of & separated from production, together with soil hydrocarbons agreeing closely with production.	E. E. Rosaire, "Geophysics" 3 (2), March, 1938
Prior to 1939.	Soil Survey, by E. E. Rosaire	Permian Basin, the Ill. Coal Basin, S. Arkansas, Mid-Continent	Experimental?	Sediments overlying favorable and possibly productive structures are characterized by "Halo" patterns of the heavier hydrocarbons	C. A. Heiland, "Geophysics", 4 (1), Jan., 1939
Prior to 1939.	Soil Survey, by E. McDermott	East Texas Field, Texas	Experimental	Hydrocarbons (ethane, ethylene waxes) and mineralization profiles.	E. McDermott, "Geophysics" 4 (3), July, 1939.
Prior to 1939.	Soil Survey, by McDermott	Big Lake Field, Reagan Co., Texas	Experimental	The heaviest concentrations of hydrocarbons occur of the field.	E. McDermott, "Geophysics" 4 (3), July, 1939
1939.....	Soil Analysis, by E. McDermott	Coles Levee, Canal, Ten Section Oil Fields, San Joaquin Val. Calif.	Experimental	Hydrocarbon and mineralization distribution mapped.	E. McDermott, "Geophysics" 4 (3), July, 1939
1939.....	Geodynamic Survey, by S. J. Pirson	Independence Township, Allegany Co., New York	Experimental	Geodynamic Survey coincides with geological trends.	S. J. Pirson, A.A.P.G. Bull., Aug., 1940
1939.....	Geodynamic Survey, by S. J. Pirson	Hartsville & Canisteo Twps. Steuben Co., N. Y.	Experimental?	Survey coincides with geological trends.	S. J. Pirson, A.A.P.G. Bull. Aug., 1940.
1939.....	Geodynamic Survey, by S. J. Pirson	Hanley & Bird's Vanderhoof No. 1 well, Steuben Co., New York	Exploration	"Halo" pattern. Commercial gas well located.	E. E. Rosaire, A.A.P.G., Bull., Aug., 1940.
1939.....	Soil Analysis, by E. E. Rosaire?	Stroud Prospect, Okla.	Exploration	Gas Field discovery.	E. Rosaire, A.A.P.G. Bull., Aug., 1940
Prior to 1939.	Soil Analysis, by E. E. Rosaire?	Turkey Creek Oil Field, Nueces Co., Texas	Exploration	Extension of oil productive area made.	E. Rosaire, A.A.P.G. Bull., Aug., 1940
Prior to 1939.	Soil Analysis, by E. E. Rosaire?	Rosecrans, Greeley, Montebello Oil Fields, S. California	Exploration	Extension of oil fields accomplished.	E. Rosaire, A.A.P.G. Bull., Aug., 1940
Prior to 1939.	Soil Analysis, by E. E. Rosaire?	Eureka, Hastings, Friendswood, Reynolds Fields, Gulf Coast Area.	Exploration	Determination of accurate limit of the oil pools achieved.	E. Rosaire, A.A.P.G. Bull., Aug., 1940
Prior to 1939.	Soil Analysis, by E. E. Rosaire?	Welsh, Ezzel, Sugarland Fields, Gulf Coast Area	Exploration	"Halo" patterns found.	E. Rosaire, A.A.P.G., Bull., Aug., 1940
Prior to 1939.	Soil Analysis, by E. E. Rosaire?	Coalinga, N. E. Coalinga, Rio Bravo, Huntington Beach, Dominguez, Montebello, Signal Hill Oil Fields, S. California	Exploration?	"Halo" patterns found.	E. Rosaire, A.A.P.G., Bull., Aug., 1940
Prior to 1939.	Soil Analysis, by E. E. Rosaire?	Goldsmith, Bennett in the Permian Basin. Ramsey, Stroud, Sac & Fox Oil Fields in Oklahoma	Exploration?	"Halo" patterns found.	E. Rosaire, A.A.P.G., Bull., Aug. 1940.
1939.....	Soil Survey, by Seaboard Oil Co.	East Mathis Field, San Patricio Co., Texas	Exploration	Oil Field Discovery.	D. H. Stormoni, O. & G. J., July 20, 1939.
1939?.....	Geochemical Well Logging	E. Bernard Field, Texas	Exploration	Gas & Distillate well located	E. E. Rosaire A.A.P.G., Bull., Aug., 1940.
1940.....	Soil Analysis, by E. McDermott	Cedar Lake Field, Gaines Co., Texas	Experimental	Concentration of hydrocarbons & mineralization mapped	E. McDermott A.A.P.G. Bull., May, 1940.
1940.....	Soil Analysis, by E. McDermott	Hobbs Field and Monument Field, Lea Co., New Mexico	Experimental	Concentration of hydrocarbons & mineralization mapped	E. McDermott A.A.P.G. Bull., May, 1940
Prior to 1940.	Geodynamic Survey, by S. J. Pirson	Van Gilder Rigby No. 1, South New York	Exploration	Condemned by geodynamic survey. Proved dry by drilling.	S. J. Pirson, A.A.P.G., Bull., Aug., 1940
Prior to 1940.	Geodynamic Survey, by S. J. Pirson	Mills Bennett Prod. Co., Trunchard No. 1 well, Colorado City, Texas	Exploration	Recommended by geodynamic survey. Proved to be dry by drlg.	S. J. Pirson, A.A.P.G. Bull., Aug., 1940
Prior to 1940.	Geodynamic Survey, by S. J. Pirson	Belmont Quadrangle Drill Co.'s Baham well	Exploration	Recommended by survey. Proved to be dry by drilling.	S. J. Pirson, A.A.P.G. Bull., Aug., 1940
1940?.....	Geodynamic Survey, by S. J. Pirson	Near the Bradford Field, Pennsylvania	Exploration	Max. leakage rate for methane determined in checking stratigraphic trap.	S. J. Pirson, "O. & G. J.", Feb. 20, 1941.
1941.....	Geodynamic Survey, by S. J. Pirson	Music Mt. Field, Bradford, Penn.	Exploration	Producing well located.	S. J. Pirson, "Oil Weekly", Jan. 12, 1942
1942.....	Geodynamic Survey, by S. J. Pirson	Near Bradford, Penn.	Exploration?	Ethane leakage mapped	S. J. Pirson, "World Petroleum" April, 1942.
1942.....	Geodynamic Survey, by S. J. Pirson	Palmer Well, Benton, Indiana	Exploration	Condenmed by survey. By drilling, proved to be dry	S. J. Pirson "Oil Weekly", Aug. 2, 1943
1942.....	Geodynamic Survey, by S. J. Pirson	Erwin Garner No. 1, Jasper, Ill.	Exploration	The survey indicated the possibility of edge water. Drilling results not known.	S. J. Pirson, "Oil Weekly", Aug. 2, 1943
1942.....	Geodynamic Survey, by S. J. Pirson	Cameron O. L. No. 1, Clay, Ill.	Exploration	Recommended as an edge well by the survey. By drilling, edge discovery well located (Bible Grove Field).	S. J. Pirson, "Oil Weekly", Aug. 2, 1943
1942.....	Geodynamic Survey, by S. J. Pirson	Sinclair Wyom. St. No. 1, Clay, Ill.	Exploration	Condemned by the survey. Proved to be dry by drilling	S. J. Pirson, "Oil Weekly", Aug. 2, 1943
1942.....	Geodynamic Survey, by S. J. Pirson	McLaughlin-McG. No. 1, McLean, Ill.	Exploration	Condemned by the survey. Proved to be dry by drilling.	S. J. Pirson, "Oil Weekly", Aug. 2, 1943

TABLE 1—Continued

Based on published instances of the application of geochemical methods in exploration for oil.

Year of Exploration	Type of Survey and Conducted by	Location	Purpose or Predictions Made	Results Achieved as Depicted by the Authors	Source of Information
1942	Geodynamic Survey, by S. J. Pirson	Ohio Oil, Clarke, Ill.	Exploration	Condemned by survey. Not Drilled.	S. J. Pirson, "Oil Weekly", Aug. 2, 1943.
1942	Geodynamic Survey, by S. J. Pirson	Company No. 9, Clay, Ill.	Exploration	Condemned by the survey. Proved to be dry by drilling.	S. J. Pirson, "Oil Weekly", Aug. 2, 1943.
1942	Geodynamic Survey, by S. J. Pirson	Albright Block, Wayne, Ill.	Exploration	Condemned by the survey. Proved to be dry by drilling.	S. J. Pirson, "Oil Weekly" Aug. 2, 1943.
1942	Geodynamic Survey, by S. J. Pirson	Jonsonville Field (extension), Wayne, Ill.	Exploration	Condemned by the survey. Not drilled.	S. J. Pirson, "Oil Weekly", Aug. 2, 1943.
1942	Geodynamic Survey, by S. J. Pirson	Ste. Anne Pet. Cody Well, Kankakee, Ill.	Exploration	Condemned by the survey. Proved to be dry by drilling.	S. J. Pirson, "Oil Weekly", Aug. 2, 1943.
1942	Geodynamic Survey, by S. J. Pirson	Jablowsky-Bristow No. 1, Edwards, Ill.	Exploration	Condemned by the survey. Proved to be dry by drilling.	S. J. Pirson, "Oil Weekly", Aug. 2, 1943
1942	Geodynamic Survey, by S. J. Pirson	Wayne Co. Prod. Taylor No. 1, Wayne, Ill.	Exploration	Recommended as a possible edge well. Proved to be dry by drilling.	S. J. Pirson, "Oil Weekly", Aug. 2, 1943.
1942	Geodynamic Survey, by S. J. Pirson	Elliott Well, Lake, Ind.	Exploration	Recommended as possible edge wells. Both proved to be dry by drilling.	S. J. Pirson, "Oil Weekly", Aug. 2, 1943.
1942	Geodynamic Survey, by S. J. Pirson	Bonded Oil Co. Well, Lake, Indiana.	Exploration		
1944	Soil Survey, by R. Maurice Tripp	Fort Collins Anticline, Colorado.	Experimental	Concentrations of wax over Fort Collins Anticline mapped.	R. M. Tripp, "Geophysics", July, 1944.

to the surface transport quantities of subsurface waters and the minerals dissolved in these waters." McDermott believes that from the point of exploration the presence of liquid hydrocarbons usually found immediately below the surface, is an important indication factor in the interpretation of geochemical data.

Pirson's Beliefs

Pirson, a pioneer in the so-called "geodynamic" surveys, believes that soil analysis techniques developed in this country cannot serve as a reliable tool in exploration for oil. Pirson states that there are three ways by which gas may travel from the reservoirs to the surface of the ground, as follows: 1, By permeation; 2, By effusion; 3, By diffusion. By combining D'Arcy's and Fick's Laws he gives a formula for a mass rate of flow of gas over an oil accumulation:

$$V \text{ (mass rate of flow of gas)} = \chi \frac{dp}{dx}$$

where: $\frac{dp}{dx}$, pressure gradient

χ, the combined permeation-diffusion coefficient.

By measuring the rate of flow of gas under specified pressure and time interval, geodynamic survey, according to Pirson, is able to detect underground oil accumulations better than the soil surveys which measure the "static" concentrations of hydrocarbons in the soil. Pirson states in one of his recent publications: "The results so far obtained in geodynamic prospecting have definitely established the theory that the gas leakage from a subterraneous accumulations takes place, not only vertically, but laterally as well . . . The soil hydrocarbon "halo" observed by soil analysis methods is, therefore, a soil manifestation depending altogether on the soil characteristics which may, however, be related to oil and gas accumulations in a limited number of cases . . . Geodynamic prospecting has the advantage of possessing "depth control," i.e., the ability to distinguish between a shallow and deep accumulation . . . Geodynamic prospecting requires but a limited number of stations . . . No correction whatever for the types of soils, their permeability, porosity, and other characteristics is necessary."

Soil Analysis Methods

In soil analysis methods, the art of interpretation of the data so obtained depends on a careful consideration of numerous factors as follows: the presence or the absence of certain constituents, the concentration of the constituents, the ratio of weights of the constituents found, the pattern of their distribution ("halo" and "maximum" for example), and to some extent on the character and conditions of the soil as well as on the type of technique used for the determination of essential constituents. McDermott is stressing the exploratory value of liquid hydrocarbons found immediately below the surface. Horvitz is emphasizing the exploratory value of ethane, propane, of liquids and solid hydrocarbons, of pseudo-hexane in West Texas and in the areas where the beds of caliche are encountered.

In geodynamic prospecting, which, according to Pirson, purports to measure the undisturbed rate of hydrocarbon gas diffusion through a measured area, the art of interpretation is less complicated.

Both geodynamic and soil analysis methods express the data so obtained either in profiles or in iso-concentration contours, or in both.

The cost of geochemical survey depends on the number of stations, type of information desired, geological and topographical conditions present in the area under investigation, and other conditions. Jakosky states that the cost per sample (analysis for H, methane, ethane, and pseudo-hexane) is about $7.50. The cost per sample for an analysis of liquid hydrocarbons and mineralization averages about $10. To each of the previous costs must be added the cost of surveying the ground, shipping of the samples, supervision, digging the holes, etc. Some of the investigators state that four stations per square mile are sufficient in reconnaissance surveys. Detailed survey, however, would require at least eight stations per square mile.

It is of interest to note that Hoover and Washburn advocate the use of a mass spectrograph in geochemical prospecting. West recently suggested the use of the scattering of electrons phenomena in the gas analysis. Other possibilities include the utilization of low voltage exitation and the observation of resonance radiation. Also, infrared absorption spectroscopy and Romann effect spectrography have been suggested for the use in geochemical prospecting.

Recapitulation and Conclusions

The main features of the theory of accumulation of oil in underground reservoirs, stratigraphic or petrographic traps included, were stated by Munn, Rich, and their coworkers more than three decades ago.

Rapid development of structural methods of exploration (seismic, gravitational, electric, etc.), as well as the existence of large unexplored territories in this country, has kept in background the interest in the search for stratigraphic or petrographic oil traps.

To Hassler, Laubmeyer, Sokolov and his coworkers should be given credit for drawing the attention of the American oil industry to the possibilities of geochemical exploration.

Rosaire, Horovitz, McDermott on one hand, and Pirson on the other, should be considered as the pioneers in the development of soil analysis methods and geodynamic method, respectively.

Soil analysis methods are concerned with the determination of the gaseous hydrocarbons, liquid and solid hydrocarbons and certain essential inorganic substances of the soil. By the presence or absence of certain constituents, their concentration, and the pattern of distribution, a geochemist is able to evaluate oil possibility of the area under investigation. However, because of lack of detailed knowledge of the laws governing the migration of gas and oil to the soil and, perhaps, the lack of detailed regional geochemical data, the interpretation of the data obtained by soil survey is chiefly based on certain empirical formulae derived from experience. It is of interest to know that there is still no complete agreement among the geochemists on the relative value in exploration for oil of the constituents found in the soil overlying oil accumulation.

In geodynamic analysis the undisturbed rate of hydrocarbon gas diffusion through a measured area is measured.

According to Pirson, the interpretation of geodynamic data may yield the information related not only to the presence or the absence of oil accumulation in the area under investigation, but to the depth, shallow or deep, of the deposit as well.

Geochemical Prospecting Table 1 gives in tabulated form the results of geochemical exploration, both soil analysis and geodynamic, based on the published instances of the application of geochemical methods in the American oil industry. The study of Table 1 indicates that up to 1943 very few oil fields were discovered through the use of geochemical methods; however, their usefulness in the extension and delineation of established and newly discovered oil pools is well marked.

It is probable that the increase in knowledge of the laws governing the migration of gas into the soil, as well as the gradual accumulation of pertinent geochemical field data, may greatly increase the usefulness of geochemical prospecting and make it an indispensable and powerful tool in exploration for oil.

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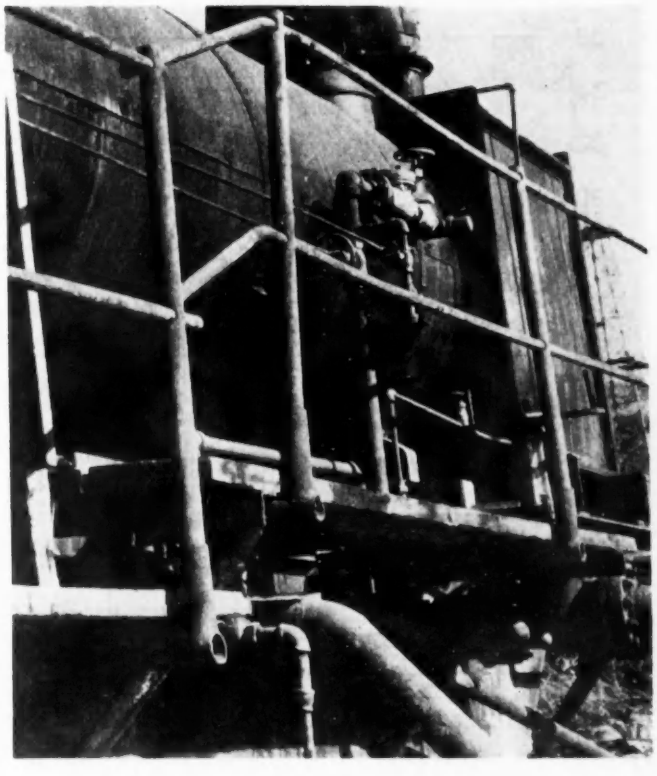
Unitized Boiler Battery Walkways

MATCHING the ease of assembling and portability of the battery of boilers belonging to a major producing company is the cat walk and hand rail system devised by the drilling superintendent. The boiler units are mounted on individual skid bases and all water, steam and blow-down lines are sectionalized, that is, are laid laterally across the bases and broken into boiler-width units and joined together at each location by quick-attaching unions. In order to have walkways and hand rails unitized so these parts might also be adaptable to any one or several of the individual boiler units that might be used in a particular battery, a quickly assembled piping framework mounted atop easily assembled bases was built up out of salvaged piping of several sizes.



Walkway supports consisting of short horizontal lengths of 2-inch pipe braced by similar pieces extending downward at a 45-degree angle to the I-beam base of the boiler, are supported at regular intervals along the side of the unit. Inboard ends of the horizontal supports are anchored by means of short pipe nipples welded at 90 degrees from the horizontal and which "look" downward, these nipples being inserted in similar matching sockets welded to the boiler base member. The lower end of each of the angular braces is provided with a welded shoe of angle iron to provide a more secure rest against the inner corner of the I-beam. At the outer end of each horizontal supporting member is welded a 6-inch length of 2-inch pipe, this being set in an upright position. These fittings serve as sockets into which are placed 3-foot stanchions for the hand rail. These stanchions are designed for the rails and have oversize 1-inch holes cut through them at two levels—top and center—through which are run lengths of 1-inch pipe. Two levels of railing are used, as shown in the photograph.

Decking for the walkway consists of two 2x12 planks laid longitudinally. These also are unitized, this being done by bolting to the under side of the end of each pair of planks a short piece of angle iron. This addition not only holds the planks together and in their proper position, but with the under-hang of the angle iron extending downward at each end, prevents the flooring from slipping end-ways along the top of the supports. As will be seen, shifting of the walkway to different levels presents no problem to this type of installation. Planking is terminated at the break-off points leaving a short step, while the railing is bent up or down to the new level. Such a bend in the railing members means only that the pipe must be run through from only the one end.

Easily Installed

This type of railing has served its purpose well, being quick and easy to install and 100 percent salvagable when the battery is moved to another location. Only reasonable care need be taken to see that component parts of the assembly are kept together. No welding or pipe cutting is needed at new rig locations, as is commonly the case with conventional boiler set-ups. It is sturdy and will support considerable weight. Following initial cost of construction, which in itself is slight since salvaged materials are used throughout, there is practically no upkeep to this unitized system and it will repay its cost many times over.

Behavior and Control of Natural

Water-Drive Reservoirs

By GEORGE R. ELLIOTT, Phillips Petroleum Company, Bartlesville, Oklahoma

IT IS now generally accepted that water drive is capable of yielding 60 to 80 percent of the original oil in place in most reservoirs, as compared with 20 to 40 percent for dissolved-gas drive. There is no need to question the importance of controlling a reservoir in order to take advantage of such an efficient mechanism.

What is a water-drive reservoir? Oil reservoirs usually combine two or more of the four basic mechanisms: dissolved-gas drive, gas-cap drive, water drive, gravity drainage. A water-drive reservoir is one in which water advances to take the place of the oil and gas produced. When the oil withdrawal rate is sufficiently low, the water will tend to maintain pressure. The maximum effectiveness is attained when the water follows the oil withdrawal so closely that little or no decline in pressure occurs.

Water drive can yield 60 to 80 percent of original oil in place in most reservoirs

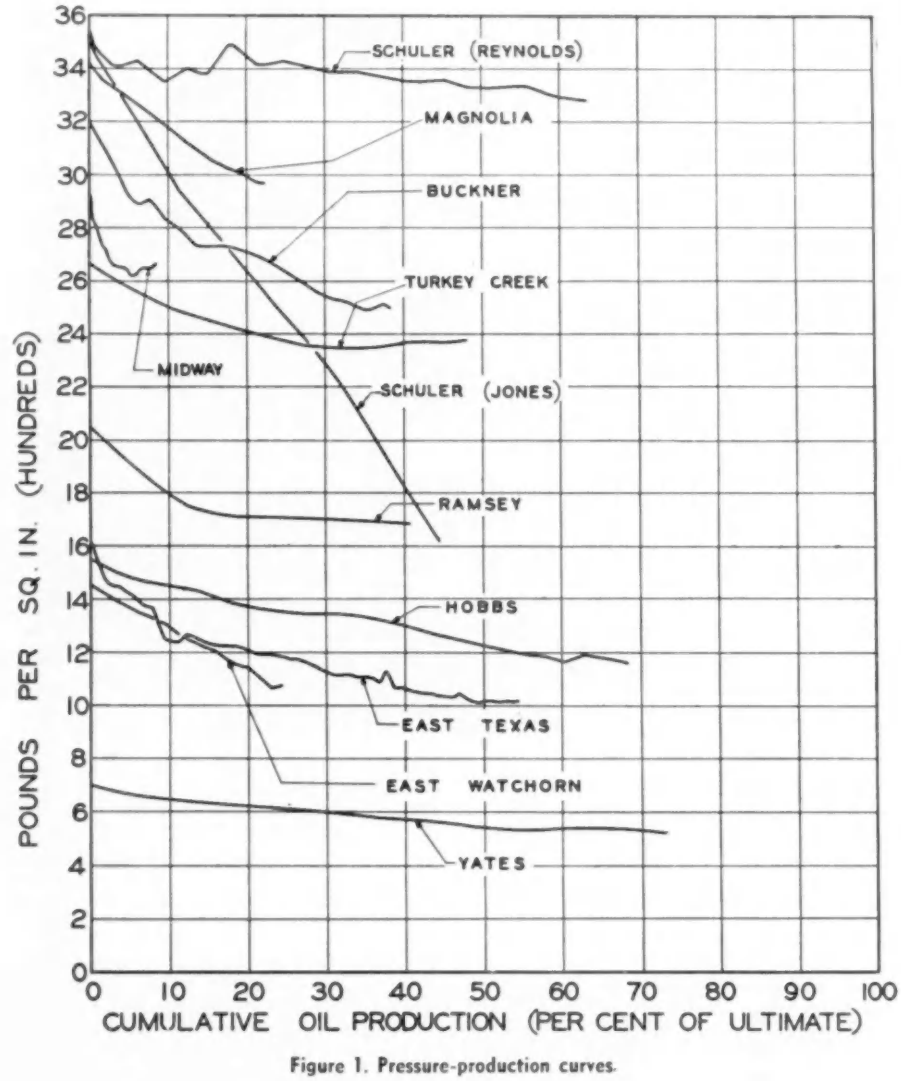


Figure 1. Pressure-production curves.

When Water Is Significant

Oil in its underground reservoir is associated with water. This water is significant in the production of the oil according to the source of supply and the permeability of the surrounding formation. As oil is produced and the pressure is lowered, water can move in to replace the oil. With adequate supply and sufficient permeability, actual movement takes place on an extensive scale.

The first movement of water takes place by expansion of the water and its associated fluids. While this expansion is of little importance in some fields, in others it is sufficient to supply all of the energy required for the production of oil. When a pressure differential has been established between the oil reservoir and the outcrop of the productive formation, or any point at which extraneous water may enter, there is a tendency to set up a condition of steady flow; i.e., one in which the supply of extraneous water balances the fluid withdrawal from the field.

Capillary forces at the water-oil interface tend to displace the oil with water (assuming the reservoir rock to be "water wet"). The magnitude of the capillary forces is greater in the less permeable sands. In some reservoirs it is possible to produce at a low enough rate so that capillary forces are an important factor. When this rate can be attained, more regular movement of water results.

As water replaces the oil, it tends to maintain the reservoir pressure. For most reservoirs there is a withdrawal rate that will permit the encroaching water to maintain pressure or to achieve a slow pressure decline. In some cases this withdrawal rate will be commercially attainable and such fields may be produced with an "effective" water drive and will approach maximum economic recovery.

Two distinct concepts are to be recognized in considering water drive; water expansion and artesian flow. The expansion mechanism can operate in any oil reservoir; being most effective where the total volume of edge water is large (as in East Texas). In a lenslike reservoir, expansion drive can exist but artesian drive cannot. A blanket reservoir cut by faults may perform as does a lens-type reservoir. No histories are available of pools where an important part of production resulted from artesian water drives; on the other hand, the number

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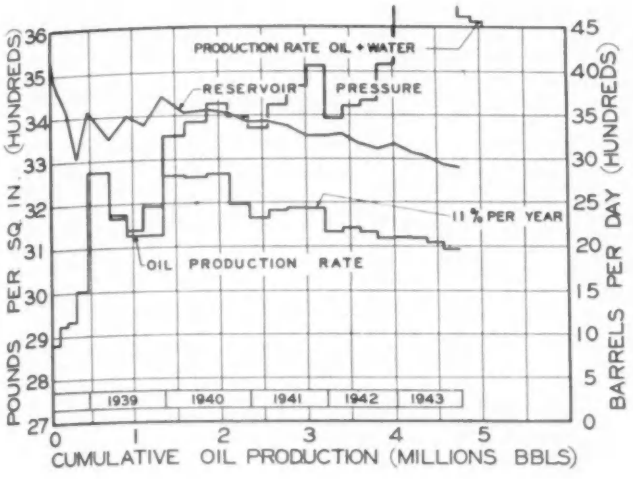

Figure 2 (left). Schuler (Reynolds) pressure-production graph.

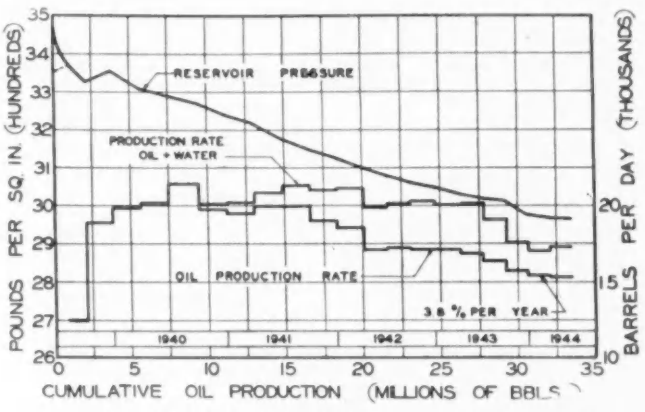

Figure 3 (above). Magnolia pressure-production graph.

of studies of expansion water-drive pools steadily increases.[50]

Efficiency of Water Drive

As long ago as 1880, Carrl[1] said: The flooding of an oil district is generally viewed as a great calamity, yet it may be questioned whether a larger amount of oil may not be drawn from the rock in that way than in any other; for it is certain that all the oil cannot be drawn from the reservoir without the admission of something to take its place.

Two Russian investigators[10] presented some of the earliest actual figures on the efficiency of recovery under water drive. In many California fields, water drive was early recognized as an efficient recovery mechanism.[13,16,23]

Laboratory flooding of cores of North Texas Pennsylvanian sand obtained residual saturations 12.3 to 17.5 percent.[46] It was estimated that the residual oil saturation after field water-flooding would be in the order of 17 to 20 percent. It was considered that practically all of the recoverable oil would have been removed from a segment of formation located at a point estimated at from 12 to 15 feet behind the front of an advancing water drive in one case and 25 to 40 feet in another case.

The ratio between the viscosity of oil and that of water causes water displacement to be inherently more effective than gas and to result in the recovery of a relatively large percentage of the oil in place prior to the time that the water front breaks through. Water drive is capable of yielding 60 to 80 percent of the oil in place in most sands.[58]

As early as 1916, McMurray and Lewis[3] drew cross sections to show the effect of the difference in porosity of sands on the extraction of gas and invasion of water, and how water came in and flooded the sand through the most porous streaks. In 1921, Mills[5] studied the behavior of oil and water in a sand as oil is withdrawn through wells. His experiments showed that water flowing through the coarse sands advanced ahead of the oil and entered the fine sands, producing a water cone and rendering the fine sands around the well more permeable to water but less permeable to oil. The effect was to retard the movement of the remaining oil to the well. It was not until about 15 years later that this subject of relative permeability to oil and water became an important phase of reservoir study.

Other experiments,[6] about 1920 to 1922, showed that water invading an oil-saturated sand body composed of a relatively coarse-grained and a relatively fine-grained sand displaced (within certain limits) the oil from the coarse sand and not from the fine sand. Twelve years after studies by Mills, similar experiments[22] showed the tendency of water to by-pass oil in more finely grained layers, this tendency increasing with the increase in the difference of permeability between the separate sand layers.

The relationship between capillary pressure, water saturation and permeability is such that the tendency is for the fine sands always to maintain higher water saturation at equilibrium than the adjacent coarse sands at the same level.[42] The complexity of natural reservoirs prohibits formulation of any single connoted expression relating over-all flushing efficiency to the rate of production, or to any of the other pertinent variables. The factors involved, however, may be illustrated in a qualitative fashion by considering the behavior of a small lens of tight, fine sand embedded in a coarse, more permeable sand some distance above the original water table. If the rate of production allows the water table to rise slowly enough to permit the maintenance of capillary equilibrium, water saturation in the coarse sand will gradually increase simultaneously with the rise of the water table. As the water saturation in the adjacent coarse sand increases, the tight lens will imbibe water and expel oil, both by absorbing water at the bottom and expelling water at the top and by counterflow of water and oil over the entire surface of the lens, tending always to maintain a higher water saturation than that reached by the surrounding coarse sand.

Significance of Production Rate

Even to early investigators it became apparent that trapping of oil in sand bodies of low permeability might be

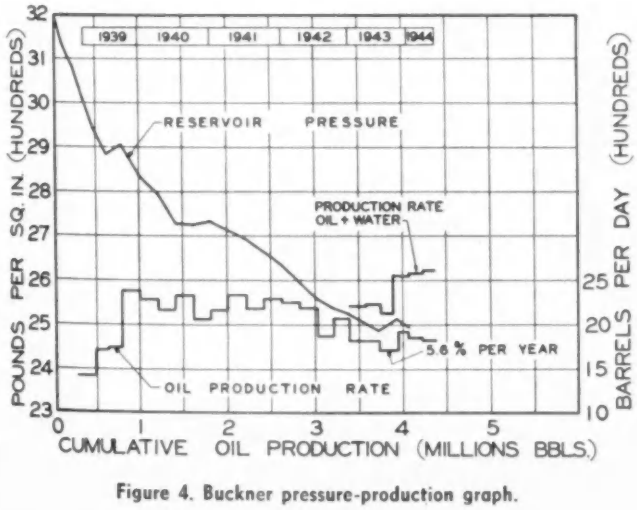

Figure 4. Buckner pressure-production graph.

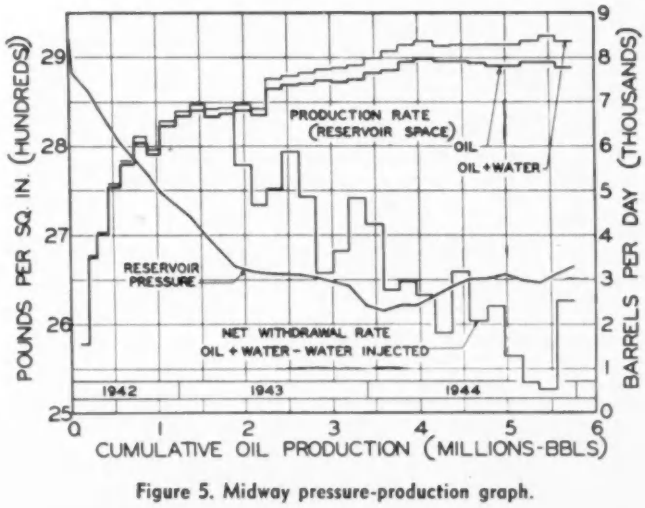

Figure 5. Midway pressure-production graph.

avoided, or at least reduced, by lower rates of production. Water-encroachment rate in relation to efficiency of oil recovery was first discussed in AIME publications in 1927.[8]

Muskat[28] included a study of the rates of encroachment of water into an oil sand with his study of two-fluid systems in porous media.

A graph drawn for the East Texas field, showing calculated reservoir pressure and accumulative production for various constant production rates, clearly brings out the possibilities of producing more oil at a higher average pressure level by using lower rates of production.[30]

Under high rates of production[4] a tight lens will become suddenly surrounded by a zone of high water saturation. Oil will escape from the tight sand but so slowly and into a region of such high water saturation that the oil will not be recovered. In time the lens will give up its oil but as a practical matter it may be considered that the oil is trapped and lost. For this particular situation, it is evident that the slower the rate of water advance, the higher the oil recovery.

There are two main controls of water encroachment: permeability, and rate of withdrawal.[22] The removal of oil and gas lowers the pressure in the reservoir and the water surrounding the reservoir tends to move into the region of lower pressure. When the permeabilities of the rock are high enough and withdrawal rates are sufficiently low, this tendency of water may become an actual encroachment of such magnitude that the pressure is sustained in the oil reservoir. On the other hand, with low permeabilities and comparatively high withdrawal rate, no effects of water encroachment may be observed during the life of the pool, the pressures declining as though no water were present behind the oil accumulation.

It is necessary to reconcile two apparently opposed viewpoints as to the effect of rate of water encroachment. In most water-drive reservoirs, the oil formation is probably "water wet" and slow velocities will result in the greatest oil recovery. Where "oil-wet" conditions prevail, the possible greater efficiency of high velocities must be considered.

It is important to consider rate of water production along with oil-production rate in a water-drive reservoir.[88] Production at a high pressure level is desirable to avoid the shift to dissolved-gas type drive. It is readily apparent that the production of water must be balanced with the oil-production rate against the pressure that is desired. If the oil rate is low, the water rate may be comparatively high without causing waste; on the other hand, if maximum oil rate is required, water production must be curtailed.

Degree of Water Drive

Degree of water drive is influenced by both natural conditions and operating conditions. Natural conditions are (1) the gas-oil relationships, (2) character of the aquifer, (3) permeability. Operating conditions are functions of the withdrawal rate.

The gas-oil relation in the reservoir indicates whether the reservoir crude was initially saturated or undersaturated; if saturated, whether or not there was an original gas cap, and if so its size relative to the oil-saturated portion of the reservoir.

The character of the aquifer refers to the extent of the water body, whether the source of the water that moves into the oil reservoir may be regarded as an infinite source or whether the source must be considered as so limited that water encroachment becomes a diminishing factor.

Permeability includes permeability of the formation constituting the oil reservoir, permeability of the water-saturated formation surrounding the oil reservoir, and particularly the permeability of the border zone through which the water moves into the oil zone.

Figure 1 is a group of curves of reservoir pressure plotted against cumulative oil production. The largest reservoir size represented on this graph is almost 1000 times the size of the smallest. In order to draw these curves so that their shape may be comparable, the cumulative oil production has been converted from barrels to percentage of ultimate oil recovery. It is not necessary that the ultimate oil recovery, or original reserve, from which these curves are drawn shall be estimated within narrow limits; the figure used in each case may be considered a reasonable estimate, based upon the observed behavior of the reservoir. The result of this method is to place all reservoirs on at least a roughly comparable basis with respect to "degree" of water drive.

Ten of the curves in Figure 1 represent water-drive reservoirs, recognizing that this term includes a range of widely varying reservoir behavior: Schuler (Reynolds), Arkansas; Magnolia, Arkansas; Buckner, Arkansas; Turkey Creek, Texas; Midway, Arkansas; Ramsey, Oklahoma; Hobbs, New Mexico; East Texas, Texas; East Watchorn, Oklahoma; Yates, Texas.

The steeply declining curve cutting across the upper half of the graph is a typical curve representing a dissolved-gas mechanism. This curve represents Schuler (Jones) before unitization and gas injection. Although a small gas cap was present originally and there was some water encroachment, this curve presents the distinctive character of dissolved-gas drive—a definite trend toward zero pressure at ultimate recovery. The Schuler (Jones) curve is in marked contrast to the water-drive curves, which after some decline in pressure reduce their angle of slope in varying degree.

In three of the pools the natural water drive has demonstrated its ability to maintain the pressure to zero decline. Schuler (Reynolds), although more recently declining in pressure because of higher withdrawals, indicates pressure equilibrium after a decline of 150 pounds from 3550 original. Turkey Creek reached pressure equilibrium at 310 pounds decline from 2660 pounds original. Ramsey shows pressure equilibrium after a decline of 350 pounds from 2050 original. These percentage declines are 4, 12, and 17, respectively.

If East Watchorn has reached pressure equilibrium it is after a decline of 385 pounds from 1450 pounds—a decline of approximately 27 percent.

East Texas, with the support of its water injection, reached pressure equilibrium when reservoir pressure had declined from 1600 to 1008 pounds, or 37 percent.

In two pools where the natural water drive was inadequate to maintain pressure to zero decline under prevailing withdrawal rates, the injection of water has sustained the pressure. In Midway the present maintenance of pressure is due to injection of water from an outside source. In East Texas, the injected water is water that has been produced from the reservoir.

In order to calculate a water-encroachment factor, it is assumed that the pressure in the water bodies surrounding oil reservoirs will remain at the original pressure and that the rate of water encroachment will be directly proportional to the difference between the reservoir pressure at any time and the original pressure. For a particular production period, in months, the amount of water encroached will be the product of the length of the period, the average pressure differential, and a water-encroachment factor K. At the end of any given period, the accumulated water encroachment is the sum of the amount of water encroached during each of the preceding periods; it is expressed in multiples of K. To determine the value of K, it is necessary to consider several pressure-production periods, and solve a series of functions involving n (original oil in place) and K; for example, material-balance equations for East Watchorn for 12 pressure periods reduce to the following:

$$n = 31{,}583{,}500 - 11{,}160K$$
$$n = 33{,}701{,}200 - 13{,}413K$$
$$n = 35{,}076{,}600 - 16{,}127K$$
$$n = 35{,}357{,}800 - 18{,}385K$$
$$n = 35{,}762{,}500 - 19{,}578K$$
$$n = 36{,}431{,}000 - 21{,}867K$$
$$n = 39{,}776{,}000 - 25{,}827K$$
$$n = 40{,}663{,}000 - 29{,}699K$$
$$n = 40{,}311{,}800 - 30{,}126K$$
$$n = 40{,}193{,}000 - 31{,}456K$$
$$n = 42{,}018{,}500 - 34{,}589K$$
$$n = 37{,}858{,}700 - 34{,}024K$$

The 12 equations are added; also, the same equations are multiplied by their respective coefficients of K and then added, yielding the following pair of equations:

$$12n + 286{,}251K = 448{,}733{,}600$$
$$286{,}251n + 7{,}564{,}238{,}135K = 10{,}972{,}206{,}698{,}200$$

Solving simultaneously for K,

$$K = 364$$

K represents barrels of water encroachment per month for each pound of pressure differential between the reservoir pressure at a given time and the original reservoir pressure. To arrive at an encroachment factor (K_a) that can be used to indicate "degree" of water driven when comparing one reservoir with another, K is divided by the acre-feet of oil reservoir.

Factor K_a has been calculated for other pools as described later.[90] The values are shown here to correlate with Figure 1:

Schuler (Reynolds)	0.0860
Magnolia	0.0021
Buckner	0.0036
Turkey Creek	0.0426
Ramsey	0.0300
East Watchorn	0.0107

Rate of Withdrawal

The following pages contain a discussion of individual reservoir behavior and the influence of withdrawal rate on pressure decline.

Schuler (Reynolds)

The Reynolds limestone consists of spherical oolites ranging in size from very fine to coarse, and loosely cemented. Permeabilities as high as 15,000 millidarcys are found. A typical producing section of 50 feet totals 35,000 ft-md. The reservoir crude was saturated at the initial pressure. An original gas cap occupied 10 percent of the reservoir volume. Expansion of the gas cap caused by pressure decline has been mostly off-

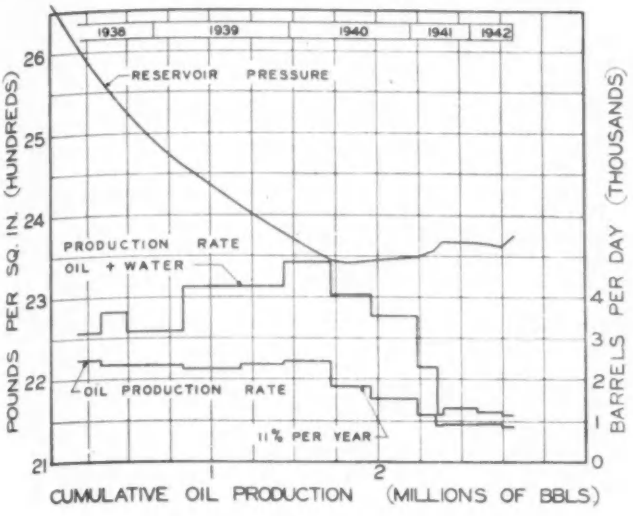

Figure 6 (left). Turkey Creek pressure-production graph.

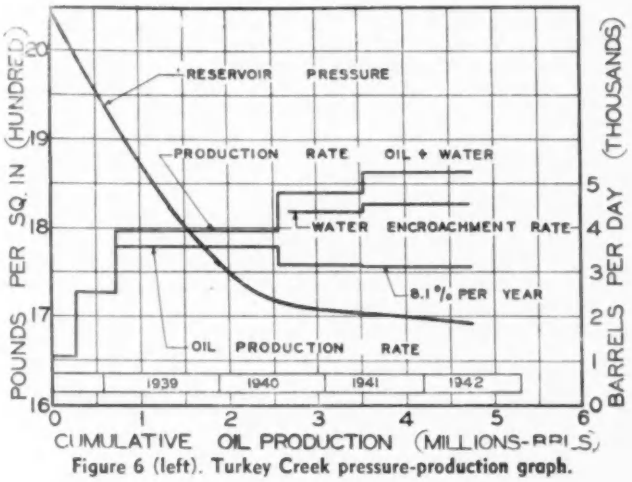

Figure 7 (above). Ramsey (Wilcox) pressure-production graph.

set by production of gas-cap gas; hence there has been little net change in the size of the gas cap.

Figure 2 shows three curves plotted against cumulative oil production: reservoir pressure at the end of each three-month period; three-month daily average oil-production rate; three-month daily average oil-plus-water-production rate.[6]

Around the one million cumulative oil point on the graph, at an oil-production rate of about 2300 barrels per day, the pressure has an upward trend. At that point, water production is becoming appreciable, and when about 800 barrels of water per day is added to 2800 barrels of oil, the pressure resumes a downward trend.

It is remarkable that with a yearly oil-withdrawal rate of 9 percent of the ultimate, such a high water-withdrawal rate as 3800 barrels per day added to an oil rate of 2000 results in no steeper downward trend than is observed in the 1943 portion of the pressure curve; this trend represents 10,000 barrels of oil produced per pound decline.

Water encroachment was calculated from material balance to be 45.4 barrels per day per pound pressure differential between reservoir pressure at any given time and the original pressure.[50] This represents 1350 barrels per pound-month. Dividing by 15,700 acre-feet water-encroachment factor K_a is 0.086 barrels per pound-month per acre-foot.

The graph indicates that about 2500 barrels per day oil-production rate balances water encroachment. Adding shrinkage and water production, this corresponds to 4000 barrels of reservoir space per day. Water-encroachment factor, calculated on that basis, is 0.051 barrels per pound-month per acre-foot.

Magnolia

Reynolds (Smackover) lime production was discovered at Magnolia in 1938. Maximum thickness of main porosity is 283 feet, five times the maximum thickness in Schuler. Permeabilities are lower than in Schuler, reaching a maximum of 6740 millidarcies. The reservoir crude was saturated at the initial pressure.

Productive area inside the 7321 subsea contour (original oil-water contact) is 4675 acres. Maximum closure on top of Smackover limestone is 321 feet; gas-oil contact 7246 subsea. Gross volume of the reservoir in the main porosity below gas-oil contact is 523,000 acre-feet; volume of gas cap, 74,000 acre-feet.[55]

Figure 3 includes the same type of pressure and production curves as Figure 2, plotted for three-month intervals against cumulative oil production.

Water production for February 1940 was 1015 barrels, or 35 barrels per day; this accompanied 19,900 barrels of oil per day. Water production for December, 1942 (approximately 25 million barrels cumulative oil) had increased to 3220 barrels per day, or 16 percent of the fluid produced. Calculated volume of water encroached to January 1, 1942, is 12,200,000 barrels,[55] which, divided by 11,057 pound-months resulted in K equal to 1130 barrels per pound-month. Dividing by 523,000 acre-feet, encroachment factor (K_a) is 0.0021 barrels per pound-month per acre-foot.

Figure 3 shows that oil-production rate of approximately 20,000 barrels per day was maintained until about 17 million barrels of oil had been produced, representing the year 1940 and most of 1941. This represents a yearly oil rate of about 5 percent of the original reserve and a pressure-production trend of 68,500 barrels produced per pound pressure decline. During the period beginning March, 1942, (20 million cumulative oil production) a 17,000-barrel daily oil-production rate prevailed, representing a yearly withdrawal rate of 4.2 percent of the original reserve. During that period, 115,000 barrels per pound was the pressure production trend. For the second quarter of 1944 (33 million cumulative oil) a withdrawal rate of 15,300 barrels per day, 3.8 percent per year (17,300 barrels per day oil plus water) apparently comes close to balancing water encroachment and maintaining pressure.

Reduction of oil-withdrawal rate appears to flatten the pressure decline even though water production increases to maintain the total oil-plus-water rate. For example, from 10 to 13 million cumulative oil (October, 1940 to March,

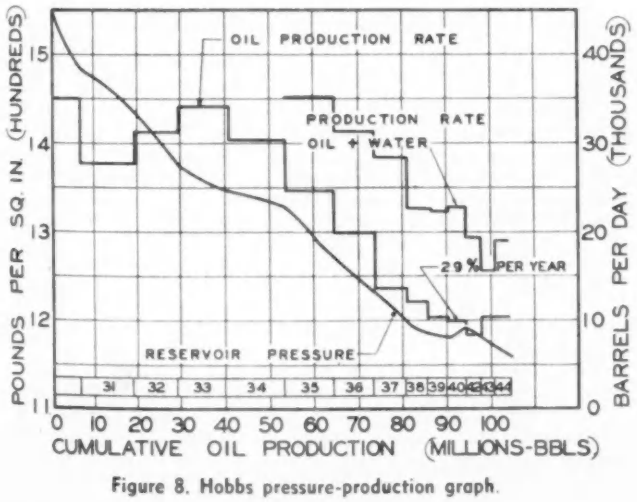

Figure 8. Hobbs pressure-production graph.

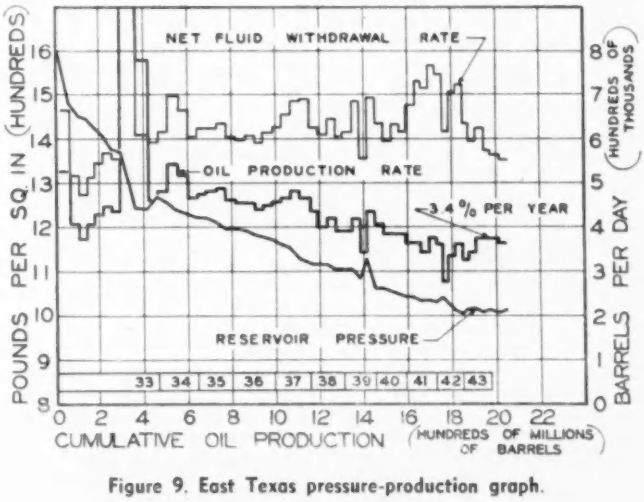

Figure 9. East Texas pressure-production graph.

1941); total oil-plus-water production rate was the same as from 20 to 27 million cumulative oil (April, 1942 to June, 1943), but the rate of decline is less for the later period.

Buckner

The three curves in Figure 4 represent the same type of pressure and production data as in Figures 2 and 3, shown for three-month intervals.

Reynolds (Smackover) lime was discovered in Buckner in 1937. Permeabilities are low. Oil-production rate has not fluctuated very widely; it has averaged about 2300 barrels per day between the 1 million and 3 million barrels cumulative oil-production points that represent the years 1940 and 1941. From 3 million to nearly 4 million barrels cumulative oil, although the oil-production rate was lower, water production had increased to 400 barrels per day; hence, total oil-plus-water production remained approximately the same from the beginning of 1940 to September, 1943.[62]

The calculated 4.2-barrel per day water encroachment per pound[60] represents a water-encroachment factor (K_a) of 0.0036 barrels per pound-month per acre-foot.

Just before reaching 4 million barrels cumulative oil in the last quarter of 1943, water production is seen to increase sharply. The first three-month period following the abrupt increase in production rate of oil plus water is represented by a steep pressure decline. Later pressure behavior is not shown because the field went on gas-lift and pressure surveys were discontinued.

Midway

Midway was discovered January 1, 1942. It produces from the Reynolds oolite zone of the Smackover limestone. Area is approximately 1700 acres. Maximum thickness of oil column is 200 feet. Average permeability is 520 millidarcies. There is no gas cap. Reservoir crude was initially undersaturated by 400 pounds; bubble point of the reservoir oil is 2528 pounds per square inch, whereas the initial pressure was 2920 pounds per square inch.[56]

Referring to Figure 5, during the 17 months from discovery to April, 1943, reservoir pressure decline 255 pounds from 2920 to 2665 pounds per square inch during the production of a little less than 2 million barrels of oil. This decline is similar to that of Buckner in its early life. Production rate had reached 5600 barrels per day, accompanied by 150 barrels of water.

From this point on, this reservoir follows a distinctive course of behavior; beginning April 19, 1943, water was injected to sustain pressure and artificially supply the additional water required to enable the reservoir to be operated under water-drive control.

In Figure 5, production rate, shown by months, is converted into terms of reservoir space voided by the oil and its solution gas plus water. The graph also shows net withdrawal—reservoir barrels of oil and water produced—less barrels of water injected. During the first five months, water injection averaging 2500 barrels per day reduced the net withdrawal rate from 7500 to 5000 barrels per day, which was apparently low enough to sustain pressure to a decline of only a few pounds. After a further reduction to an average of 4000 net barrels per day, pressure declined 37 pounds.

A second water-injection well was connected in January, 1944, and a third in March, 1944. Injection averaging 5400 to 6400 barrels per day from February to August, 1944, reduced net withdrawal to between 2000 and 3000 barrels per day, only about one third of the gross. Apparently there was sufficient natural water drive to increase the pressure 40 pounds during this seven-month period.[65]

The water-injection rate continued to be increased and a fourth injection well was connected in October, 1944. Yet the pressure resumed its decline, and it was not until nearly 8000 barrels per day was injected in November, 1944, that the pressures were again increased. This increase corresponded to a net withdrawal rate of 505 barrels per day, the volume returned being almost equal to the volume produced.[65]

Turkey Creek

The Douglas sand of the Frio (Oligocene) was discovered in Turkey Creek in January, 1938. The sand averages 17 feet thick; permeabilities average over 3000 millidarcies. Total permeability in foot-millidarcies is about the same as in Schuler (Reynolds).

Figure 6 includes the usual three curves plotted against cumulative oil production: reservoir pressure, oil-production rate, production rate oil plus water, for three-month periods.

During the production of the first half million barrels of oil, pressure production follows a straight-line decline of a dissolved-gas drive character for a decline of 100 pounds per square inch. The curve then gradually flattens. From middle of 1938 to middle of 1940 (1¾ million cumulative oil) oil-production rate remained fairly constant at 2350 to 2450 barrels per day. During this period, water production increased until the production of oil plus water during the first quarter of 1940 reached 4880 barrels per day. The abrupt drop in water production at about 2¼ million barrels cumulative oil was caused by the shutting in, early in 1941, of edge wells producing at high water-oil ratios.

Apparently the oil-plus-water withdrawal rate of 4000 barrels per day in 1940 allowed water encroachment to balance pressure decline. One year previous, in 1939 (at 1 million cumulative oil production), a considerably lower rate, 3100 barrels per day, overbalanced water encroachment, and pressure decline followed a trend of about 6000 barrels of oil produced per pound pressure decline. This is because at the beginning of the earlier period pressure had declined only 150 pounds per square inch, while at the beginning of the later period pressure had declined more than 300 pounds per square inch; water encroachment being proportional to the decline from the original pressure.

From material balance, water-encroachment K equal to 235 barrels per pound-month when divided by 5513 acre-feet gives 0.043 for K_a.

Ramsey (Wilcox)

First Wilcox (Ordovician) production was discovered in the Ramsey pool in January, 1938. The reservoir crude was saturated at the time of discovery but no gas cap was present. Maximum productive thickness is 160 feet.

In Figure 7 the pressure curve represents five pressure surveys, beginning September 1, 1938, and ending July 1, 1942. Curves for oil-production rate, production rate of oil plus water, and water-encroachment rate, represent average barrels per day for each period. The curve declines steadily until the pressure is about 300 pounds per square inch below the original, then becomes almost flat.

Pressure decline has continued at a very slow rate. The graph is not extended because of gas-injection operations after this time.

Barrels of water encroachment per month per pound pressure differential between reservoir pressure at any given time and the original pressure was determined by simultaneous equations to be 391. Dividing by 13,216 acre-feet, encroachment factor is 0.0300 barrels per pound-month per acre-foot. Water-encroachment rate in average barrels per day during the period between 2½ and 3½ million barrels cumulative oil production was calculated to be 4380. This compared with 3150 barrels per day oil production and 4790 barrels per day production of oil plus water.

Owing to the degree of water drive, the pressure declines very slightly under oil withdrawal at the yearly rate of 8 percent of ultimate, even when accompanied by water production at half the oil-production rate.

Hobbs

Hobbs was discovered in 1938, produces chiefly from the "White lime" of Permian age. The white lime consists of an upper highly porous dolomite, cavernous in many wells, and a lower, less permeable, dolomite zone; the porous dolomites are granular and frequently oolitic.[18]

An initial gas cap was present on top of the structure and expanded with the decline in pressure. Water encroached updip mainly through the highly permeable portions of the upper zone and advanced most rapidly on the southwest side of the structure, following closely the structure contour lines.[31]

Figure 8 shows three curves plotted against cumulative oil production: reservoir pressure at the end of each year; average daily oil production and average daily oil-plus-water production for each one-year period. The nearest approach to a withdrawal rate balancing reservoir pressure is at the 90 million cumulative point, where the pressure shows an increase corresponding to a withdrawal rate of approximately 10,000 barrels per day, accompanied by an equal production of water. This oil-production rate represents a yearly withdrawal of 2.9 percent of the ultimate. However, pressure resumes its decline later under no greater rate of withdrawal.

East Texas

The three curves in Figure 9, plotted against cumulative oil production, are reservoir pressure at the end of each three-month period; oil production and net fluid withdrawal rates, daily averages for each three-month period. Net fluid withdrawal is oil-gas-water production less water injection.

Permeabilities are as high as 13,000 millidarcies and a typical 70-foot section totals 350,000 foot-millidarcies.

The reservoir average pressure has remained above the saturation pressure of 740 pounds, initially being 860 pounds above.

Figure 9 shows, for most of the pro-

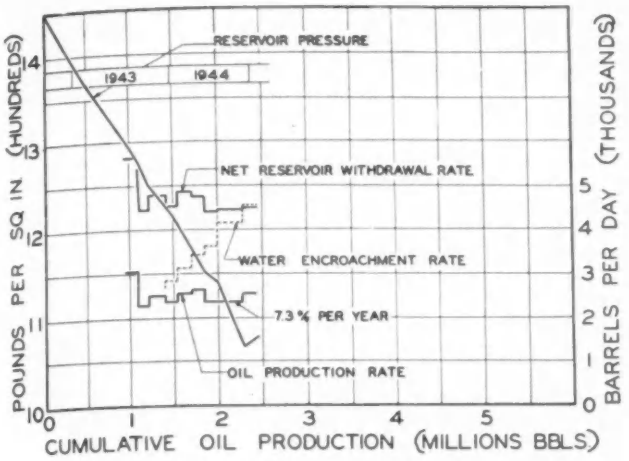

Figure 10. East Watchorn pressure-production graph.

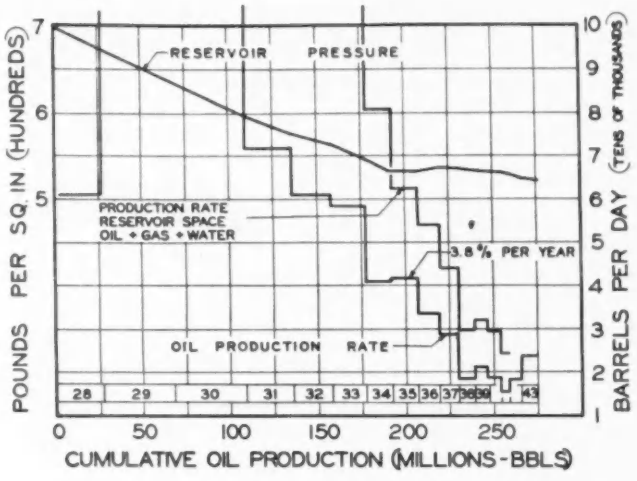
RESERVOIR PRESSURE
PRODUCTION RATE
RESERVOIR SPACE
OIL + GAS + WATER
3.8 % PER YEAR
OIL PRODUCTION RATE
28 29 30 31 32 33 34 35 36 37 38 39 43
POUNDS PER SQ IN (HUNDREDS)
BARRELS PER DAY (TENS OF THOUSANDS)
CUMULATIVE OIL PRODUCTION (MILLIONS-BBLS)

Figure 11. Yates pressure-production graph.

duction history, a declining reservoir pressure and also a downward trend of oil-production rate. It is necessary to compare with the net fluid-withdrawal curve for explanation of the behavior of the pressure curve.[63]

At 300 million barrels cumulative oil, the field was opened up to 982,000 barrels per day, three-month average; this meant 1,249,000 barrels per day net fluid withdrawal. Reservoir pressure took an abrupt drop as a consequence of this extremely high withdrawal rate.

It is apparent that a points where net fluid withdrawal was as low as 600,000 barrels per day, pressure tended to be maintained. These points are seen at cumulative oil production 600 million, 900 million, 1200 million and 1300 million. At 1400 million, net fluid withdrawal dropped to 557,000 barrels per day, causing a sharp increase in pressure from 1084 to 1128 pounds per square inch. Just before the 1800 million point, a drop of oil rate to the lowest quarterly average ever reached, 279,000 barrels per day failed to cause a pressure increase similar to that corresponding to a rate of 342,000 at the 1400 million point. The reason for this is apparent: because of the increased production of water, the net fluid withdrawal had increased from 557,000 to 618,000 barrels per day, although the oil production decreased.

The most recent period shown is one of zero pressure decline. Although the oil-production rate has not been reduced during the production of the last 200 million barrels, the injection of water has reduced the net fluid-withdrawal rate from 730,000 to 550,000 barrels per day.

East Watchorn

East Watchorn, discovered in May, 1942, produces from the Wilcox (Ordovician), 977 acres, 34,000 acre-feet.

Permeabilities range up to 1500 millidarcies, with a typical cored section of 15 feet averaging about 250 millidarcies.

Reservoir crude was saturated at initial reservoir pressure 1450 pounds per square inch. There was no original gas cap.

Figure 10 includes four curves plotted against cumulative oil production, mostly for two-month periods. Reservoir pressure and oil-production rate are the usual curves. Net reservoir withdrawal rate is made up of reservoir space represented by: produced oil, gas in solution in the produced oil, excess gas (in solution in the reservoir oil), water, less water injected. Water-encroachment rate is calculated from the water-encroachment factor 364 barrels per pound-month, derived as previously described.

During the second half of 1943 and the year 1944, reservoir withdrawal rate (net) has remained between 4400 and 4800 barrels per day. In the same period water-encroachment rate increased from 2500 to 4500 barrels per day. For the last period shown, the two months ending February 1, water-encroachment rate apparently equals net reservoir withdrawal rate. The accompanying increase in reservoir pressure needs support from a later pressure survey, but it appears to be a significant indication.

The injection of nearly all the produced water results in the reduction of withdrawal rate from 5300 to 4500 barrels per day net.

Yates

Oil production in the Yates lime of Permian age was discovered in 1927. Since 1934, a Railroad Commission rule has prohibited penetration greater than 225 feet below the top of the "Brown" lime and the thickness of the gray productive lime formation is not known. There is no evidence of an original gas cap in the limestone reservoir, but gas-cap areas formed as the pressure was reduced and gas came out of solution in the oil.

Figure 11, in addition to reservoir pressure and oil-production rate, by years, shows also barrels per day reservoir displacement.[48]

It shows that around the 200 million cumulative oil (the year 1935) the oil-production rate has been progressively reduced to about 41,000 barrels per day, corresponding to 62,000 barrels per day reservoir displacement. The pressure curve indicates for the year 1935 a balance between withdrawals and water influx.

Continued reduction of oil-production rate brings corresponding reservoir displacement three years later to a rate less than half the 1935 rate. A slight pressure decline corresponding to the lower withdrawal rate would indicate a decreasing water-encroachment factor.

Summary

1. "Degree" of water drive is controlled by both natural conditions (reservoir gas-oil relationships, extent of water body, permeability) and operating conditions (functions of the withdrawal rate).

2. Degree of water drive is calculated by material balance and also is observed from pressure-production graphs.

3. The method used to compare pools on the basis of pressure-production curves involves conversion of cumulative oil production from barrels to percentage of ultimate.

4. Examples of a calculated "water-encroachment factor" K_a (barrels of water influx per pound-month per acre-foot of oil reservoir): Schuler (Reynolds), 0.0860; Turkey Creek, 0.0426; Ramsey, 0.0300; East Watchorn, 0.0107; Buckner, 0.0036; Magnolia, 0.0021.

5. After a certain pressure decline, the slope angle of the pressure-production curve decreases in varying degree and in some cases approaches zero, indicating equilibrium between reservoir withdrawal and water influx. The following pressure declines from original pressure correspond to pressure equilibrium and indicate degrees of water drive in the same order indicated by "water-encroachment factor": Schuler (Reynolds), 150 pounds per square inch; Turkey Creek, 310; Ramsey, 350; East Watchorn, 385 (?).

6. Yearly oil-production rate (percentage of ultimate), which corresponds to pressure equilibrium, is 11 percent for Schuler (Reynolds), 11 percent for Turkey Creek, 8 percent for Ramsey, 3.5 percent for East Texas.

7. Midway is a case of artificially created water drive; in order to attain equilibrium in that reservoir, it was recently necessary to increase water injection to a rate approaching the rate of withdrawal of reservoir fluids.

8. Control is exercised by adjustment of production rate, by injection of produced water, by injection of outside water. With proper control, full advantage may be taken of the high recovery efficiency inherent in the water-drive mechanism.

The writer expresses appreciation for suggestions of C. V. Millikan as to form of presentation.

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Geological Survey Offers Los Angeles Basin Chart

Oil possibilities of the Paleocene and Eocene beds in the northern part of the Los Angeles Basin are indicated in Preliminary Chart 12 of the Oil and Gas Investigations series, issued last week by the United States Geological Survey, copies of which may be had from the Survey in Washington or Los Angeles at 40 cents each.

Announcing publication of the chart, Director William E. Wrather explained that the only well in the basin to penetrate these formations had good shows of oil, and additional testing is believed warranted.

The chart consists of a generalized geologic map of the basin, a map of the northwestern part of the Santa Ana Mountains showing the locations of six stratigraphic sections which are shown separately, fossil locations and coal and clay mines, and a brief text summarizing the stratigraphy and paleontology of the rocks studied.

May Production of Natural Gasoline Registers Gain

May production of natural gasoline and allied products averaged 13,151,000 gallons daily, an increase of 190,000 gallons over April being due to increases in East Texas, Louisiana Gulf, "other" districts of Texas, and Oklahoma which more than offset decreases in the Appalachian, central states and panhandle, according to the monthly report of the Bureau of Mines.

The bureau reported that May production of light products from natural gasoline and cycle plants included 187,851,000 gallons of natural gasoline against 177,082,000 gallons in April; 32,935,000 gallons of natural gasoline mixture against 29,736,000 gallons; 36,563,000 gallons of raw condensate against 35,661,000 gallons; 21,856,000 gallons of commercial butane-propane mixture against 21,971,000 gallons; 35,991,000 gallons of normal butane against 38,125,000 gallons; 25,029,000 gallons of propane against 23,950,000 gallons; 17,474,000 gallons of other liquefied petroleum gases against 13,829,000 gallons; 14,374,000 gallons of iso-butane against 13,669,000 gallons; 13,075,000 gallons of iso-pentane against 12,863,000 gallons; 19,423,000 gallons of finished gasoline and naphtha against 18,870,000 gallons, and 3,124,000 gallons of other products against 3,076,000 gallons.

Total stocks increased 3,768,000 gallons during the month, those at refineries rising from 97,230,000 to 97,650,000 gallons and those at plants and terminals from 103,658,000 to 107,001,000 gallons

Federal Revenue from Oil Taxes Shows Huge Increase

Federal revenue from the three oil taxes (lubricating oil, gasoline and pipe-line transportation) increased $175 million in the fiscal year 1945, which closed last June 30, over 1944, it was reported July 27 by the Internal Revenue Bureau.

The most important of the three, the gasoline tax, jumped $134 million from $271,216,502 to $405,563,011 the bureau announced, while the lubricating oil tax returned an additional $40 million, increasing from $52,473,094 to $92,865,058 and the pipe-line levy increased $435,000 from $15,850,857 to $16,286,295.

The bureau's report for June showed lubricating-oil receipts for the month at an all-time high for $13,536,751, compared with $9,924,124 in May. The gasoline tax revenue fell to $35,026,904 from $42,631,374 in May, and pipe line transportation dropped to $1,305,587 from $1,585,845.

Sunray Completes 16 wells Under Stepped-Up Program

Sunray Oil Corporation's accelerated development program the first half of 1945 resulted in a total of 163,154 feet of hole being drilled, with 16 new oil wells completed by the company and its partners in the Mid-Continent and Texas, and 15 tests drilling on July 1.

Estimated potential daily production of the new oilers is in excess of 4600 barrels. In search of increased crude, six wells were recompleted to new zones of production and 13 dry holes were drilled.

CASING PROTECTORS • STABILIZERS • PIPE WIPERS • WIRE LINE GUIDES • WIRE LINE WIPERS • KELLY WIPERS
KELLY SUB PROTECTORS • MUD GUNS • MUD GUN NOZZLES • SWIVEL BAIL BUMPERS • DEAD LINE STABILIZERS
TRAVELING BLOCK BUMPERS • TUBING PROTECTORS • SUCKER ROD WIPERS • TUBING WIPERS

Compare

YOUR UNPROTECTED WELL - WITH THIS PROTECTION

At first glance the above illustrations look similar—but there's "all the difference in the world." The string of pipe at the left is *unprotected*. It's doomed for early discard. Its cost, as finally figured, will be far more than that of the string of pipe shown at the right which is protected with Patterson-Ballagh Protectors.

Real protection costs so little when you figure total drilling costs! With Patterson-Ballagh Lipped Protectors your pipe will drill *more* wells. The initial cost of the Protectors repaid again and again by the saving in pipe, reduction of casing wear, saving in fuel, saving in time and less wear on most of the drilling equipment.

Save with Patterson-Ballagh Protectors. Use them in the next well you drill.

See Composite Catalog

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Now Made of PBX Synthetic Rubber . . . Oil and Weather Resistant

Compass Support Enables Welder to Cut Disks Without Special Templates

METAL FORMING

One of the handiest tools in the kit of an oil company shop welder is the circle-cutting device shown in the photograph. For the purpose of cutting many small diameter disks and similar sheet metal shop work, the cutting torch was modified by addition of a clamp-on device which makes a compass divider out of the torch body itself and permits the cutting of true circles without use of templates or patterns. A small rectangular piece of cold rolled steel was cut into two flat sections and made to clamp over the oxygen-acetylene tubes forming the handle of the torch, tightness of the two pieces being regulated by a shop-made thumb screw threaded through the two plates. The lower end of the one section is tapered down to a point and terminates in a threaded hole into which is screwed a centering pin.

In use, the center of the circle is determined and then center-punched, after which the torch may be brought up, the pin centered, and cutting performed. Circles with radii from a fraction of an inch up to approximately a foot may be scribed and cut out with this device. Offsetting the centering pin in the manner shown permits moving the latter up to the very edge of the cutting nozzle tip despite interference of the bulk of the casting forming the 90-degree turn of the torch head.

Ease of installing the small device makes it extremely handy to use since a twist of the washer-headed thumb screw is all that is required to install or disassemble it. It may be kept in the workman's pocket while the torch is being used for routine work not requiring use of the centering tool.

The fixed pivot assures maintenance of the same center for the entire curvature of the cut, and also eliminates the loss of material sometimes sustained when the usual soapstone mark crosses an oily area and becomes blurred or faint.

$5.00 is paid for each illustrated acceptable contribution. Mail to The Editor, THE OIL WEEKLY, P. O. Box 2608, Houston 1, Texas

Belting Remnant Stabilizes High-Lift Pull Lines

PULL-LINE SUPPORT

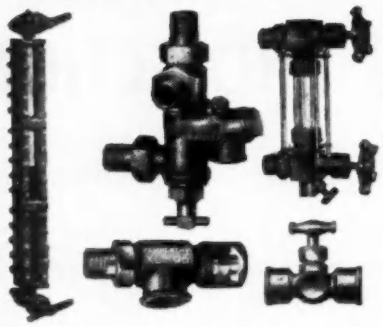
A practical yet inexpensive method of stabilizing pull-lines without attendant wearing and abrasion troubles usually experienced when such hold-down cables are attached, is illustrated in the accompanying photograph. A 3-foot length of discarded fabric belting was looped over the pull line, the two ends being clamped between two flat pieces of steel.

Through a small hole cut through both layers of the belting immediately above the clamps, a steel hook was looped, the lower end of this hook being connected to the stabilizer cable reaching to the ground. An additional feature which improves the performance of this hold-down is the use of a turnbuckle in the hold-down line which permits frequent tightening as stretch and wear develop.

Use of this belt has done away with excessive wear and frequent breakage of lines and no need has been found for use of line clamps heretofore used for preventing lateral shifting of the hold-down. The belt, being from eight to 12 inches wide, provides ample grip on the line and keeps movement to a minimum. Should the soft belting material finally wear through, a new one can be easily made.

The belting loop is not fastened to the pull-line, and thus is able to float free or shift slightly along the line until the pull on it becomes equalized at both ends of the travel. The belting, under the working of the device, soon flexes and fits snugly about the line, and then tends to clamp itself in place more tightly—this adjustment coming after automatic placing is completed.

PENBERTHY
QUALITY PRODUCTS



Penberthy liquid level gages of various types—injectors—ejectors—all so widely used throughout the oil industry because they have always been dependable under the most severe service conditions.

All are of rugged construction and made by an organization with 57 years experience in the manufacture of quality products.

See Pages 2450 to 2455, Composite Catalog.

PENBERTHY INJECTOR CO.
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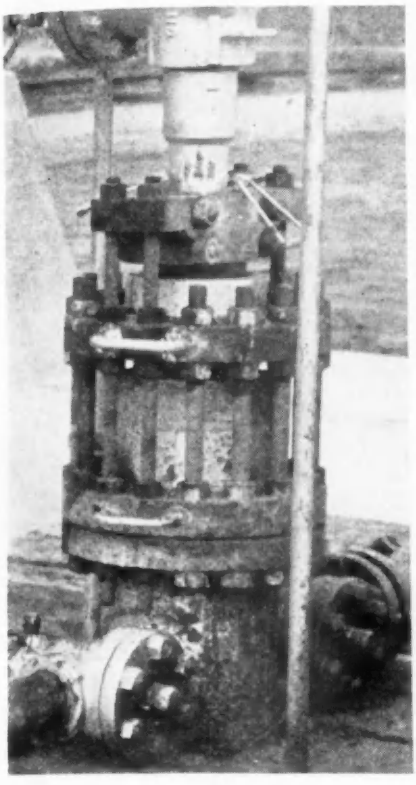
Welded Handles Simplify Spotting of Heavy Flanges



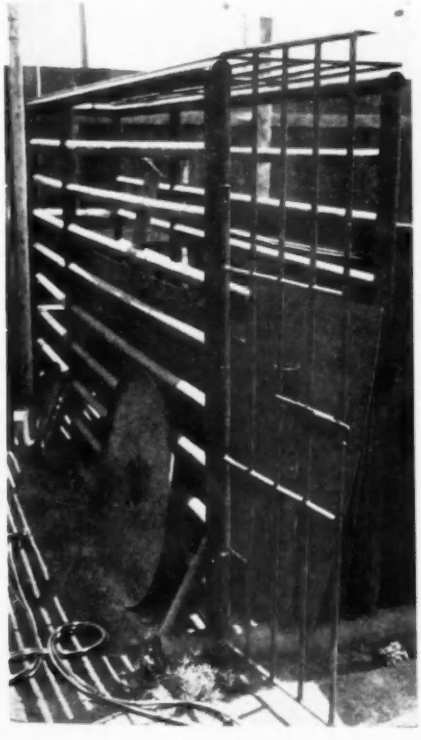
RIGGING-UP CONNECTIONS

Handling of heavy well-head fittings in the field is speeded up by one company through the expedient of welding small steel rod handles to the sides so that the field men can more easily handle and maneuver the unwieldly objects. Made of sucker rod or similar small round bars, the handles are welded at opposite sides of the heaviest parts of the flanges and are welded on before the fittings are assembled ready for installation.

At least two advantages accrue from this method of handling material. The minute a fitting is brought up to be mounted on the open well, it is more than likely to become covered with mud or oil, which thereafter causes much grief to the workmen in hastily assembling it. The handles make for easier manipulation of the fitting during this time, and in addition, afford a means of "levering" the heavy fitting around in subsequently lining up and tightening the many tie-down studs. If left on after the well is completed, the handles are not in the way, yet will contribute further in saving time whenever the well is to be pulled or redrilled at a future date.

This welding on of handles follows the design adopted by some manufacturers of cast steel flanges, where the lifting aid is cast integral with flange.

Enclosed Rack Protects Sheet Metal Stocks



MATERIALS STORAGE

Unauthorized use of choice sections of scarce light sheet-steel stock is prevented in the welding shop yard of one company by maintenance of a specially-construction enclosure which may be locked when not in use. Around the floored section of a rack specially designed for racking all types of sheet materials was built a barred enclosure having a door at one end. Sides of the enclosure are made up of closely spaced bars of 2-inch pipe and top and locking door are made up largely of sucker rod material. All welded, the structure is amply strong to support the heavy weight of steel plate leaning against its sides. A short post of 2-inch pipe welded in the center of the cage divides the section into two parts, permitting some segregation or classifying of the stock.

Such a system of storing difficultly-obtained sheet materials will go far toward prevention of unauthorized cutting up of stock that previously might have been earmarked for other or more important jobs. When one employe is given the key to the rack and the responsibility of overseeing issuance of stock, it is always known exactly how much and of what type of materials are available.

Clean Out with a MILLER Sand Pump

Refer to Composite Catalog page 1907 for description and prices.

Miller Sand Pump Co.
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OKLAHOMA CITY 9, OKLAHOMA

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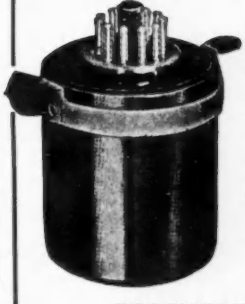

sealed against Sub tropical humidity—"Sextuples shield-in," improved uniformity, minimum size and weight, *plug-in terminal block.

**Also available with terminal lugs.*

GEOPHONE CABLE

Full line of Geophysical electronic supplies.

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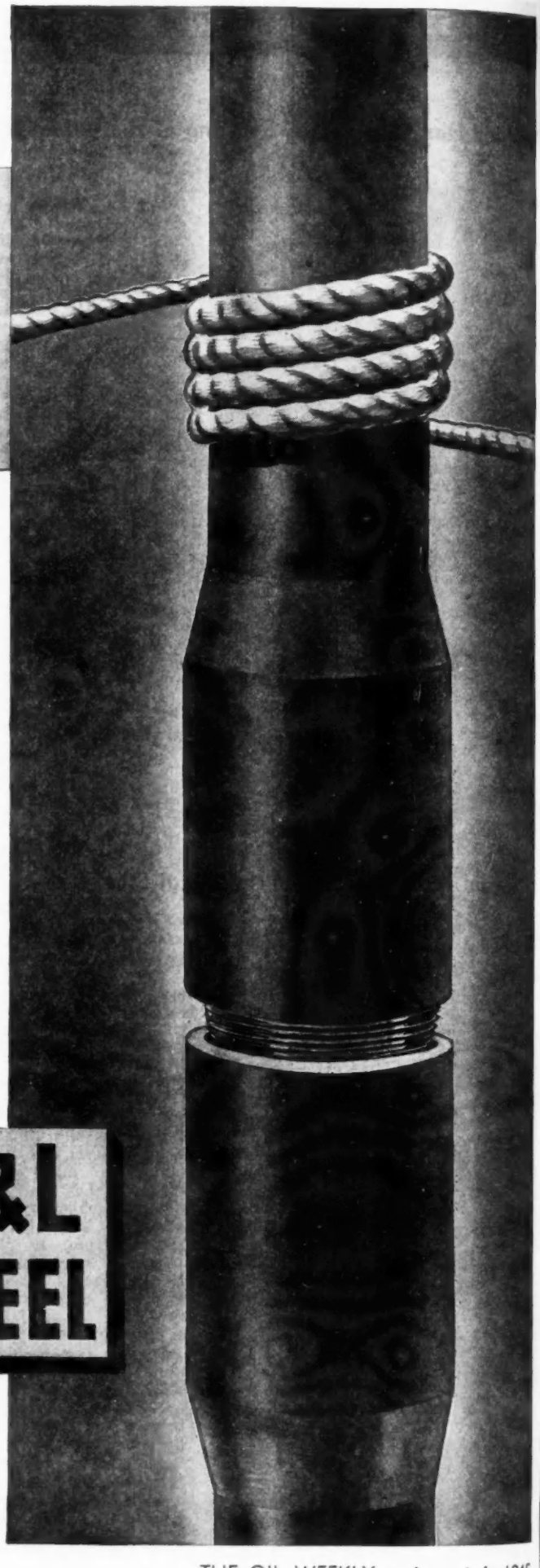
J&L INTEGRAL-JOINT DRILL PIPE



J&L Integral-Joint Drill Pipe is formed completely from single, solid billets of special Blue Ribbon Alloy Steel. It is the only drill pipe of its kind with tool-joint ends die-forged from the pipe itself.

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The Outlook

Look for a postwar epidemic of gasoline pipe lines. Almost every one now in service is paying off, particularly on short deliveries where rail rates are pretty high.

* * * *

Intensive exploration for oil is due after V-J day in foreign nations now in the non-producer class, some observers believe. They also forsee a sharp decline from the number of rigs active in the U. S. during prewar years.

* * * *

Many East Indies wells, damaged during occupation by Japs, offer such poor salvage prospects that instead the wells may be offset with new holes.

* * * *

Bidding on drilling jobs is again the vogue after many months during which it was possible for a contractor to get a job, almost at his own figure, if he could fulfill the contract.

* * * *

Motorists are hoping that Oklahoma's experience with the highest gasoline tax of any state will prove any thing but successful. The equivalent of a sales tax of more than 80 percent on this essential commodity is not cheerful to contemplate.

* * * *

Guaranteed full-employment clauses may become general in postwar union contracts, now that the way has been paved by the War Labor Board decision affirming a guarantee of 44 hours a week for 52 consecutive weeks per year for salesmen regularly employed in a New York retail shoe chain. Page 68.

* * * *

The new English labor government may prove a barrier to Washington's plan to eliminate exchange controls and other restrictions on foreign trade after the war and to develop new reciprocal trade agreements. Strict control of British exports and imports, to encourage domestic production and expand markets to take England out of the debtor class is more likely. Page 78.

* * * *

The new four-agency drive against black marketers and tax evaders may spill over into the oil industry. While both these types of violation frequently are practiced by the same person, Justice also will check alleged tax evasions by those not in any way linked with black market operations. Page 70.

* * * *

Possibilities that natural gas, aviation gasoline and seamless pipe and tubing, fields in which supply and demand currently are in approximate balance, may develop shortages in the near future are implicit WPB's announcement that these and certain other items will be kept under surveillance. These items must have preferential treatment if their present position is to be maintained.

* * * *

General tax relief will be granted by Congress next year, regardless of whether the Pacifc war is over. Senate Finance Comittee will open hearings on the tax situation in October, to be followed shortly by the House Ways and Means Committee. If the war continues, initial relief may not be great; but it will be an encouraging symptom.

* * * *

A prospective coal shortage that will cut industrial uses possibly as much as 20 percent below normal requirements next winter may expedite plans for natural gas companies to expand their facilities into the important industrial areas, and gain from the Federal Power Commission approval of projects which might be open to criticism in less emergent times.

* * * *

Greatest effect of an easier tanker situation will be on the railroads which are expected to be permitted to cut their haulings into District 1 to possibly as low as 300,000 barrels daily. Page 75.

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It's the most simple, most easy to operate and speediest instrument for surveying the inclination of a bore hole.

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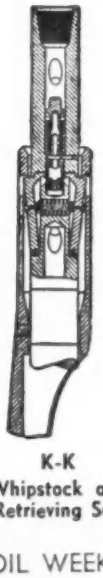

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Polar Core Orientation

The Week's News

WITH the Senate joining the House in vacation, Washington is in for a ten-week respite from congressional surveillance, and the various federal agencies will use the time to look over their plans and prepare for a host of investigations which appear likely to be launched this fall, going into every phase of our war program. Several of the probes will interest the oil industry, pipe lines and depletion, among them. Page 70.

England and Reciprocal Trade Pacts—England's new labor government may throw a monkey wrench into the administration's plans for new reciprocal trade agreements and elimination of trade controls in the European areas, through its insistence on import limitations intended to encourage British industry to wipe out a war-born international debt. Washington, however, believes that England's need for United States loans and other assistance can be used to overcome reluctance to open her market gates wider.

War Agency Central Control—War agency administration—or lack of it—is in the limelight, with suggestions in Congress for one-man control which may get serious consideration this fall when the legislators take up problems of reconversion, so far untouched. Page 70.

Ickes, Davies and PAW—Future of PAW is very much up in the air as a result of speculation as to Secretary Ickes' successor. A political appointee given control of PAW may have to look around for a man to take Deputy Administrator Davies' place. Possibilities are seen, however, of PAW being made independent, with Davies at its head. Story below.

Big Scale Sale of Surplus Oil—The first big sale of surplus oil products will be staged by RFC this month. Would-be purchasers of lubricating oils, greases and other products have been invited to submit informal offers through their nearest regional office. Success of the sale may set the pace for future disposals of goods heretofore merely listed by the RFC as available to anyone who might be interested. Sales to date have been pretty small. Page 69.

Hunt for Black Marketers—Black marketers and tax evaders who made their money in oil are in for a thorough going-over by Uncle Sam. A four-agency drive is expected to bring in millions of dollars to the Treasury and punish some of the "wise boys." Page 70.

Petroleum Transactions Abroad—Well over $50 billion in hard cash and commodities have been sent aboard by the government since July 1, 1940. Thirty-nine billion dollars of lend-lease shipments included nearly $2 billion worth of oil, with about $1 billion coming back in reverse lend-lease petroleum. Purchase of rubber, including tires and tubes, accounted for nearly a half billion of the $11,437 million spent aboard. Page 71.

Ration Order Changed—In a move to cut red tape, OPA on August 3 ruled that persons who make a single or very few importations of fuel oil into a rationed area no longer will be required to register as primary suppliers or file monthly reports. Other operations covered by Ration Order 11 remain unchanged.

Discontinues Oil Field Training—Special units training in oil field, pipe line and refinery work have been disbanded and petroleum producing areas, recaptured from the Japs, will be re-activated by nationals of Great Britain and the Netherlands. Page 71.

Effect of Potsdam Agreement—New domestic and foreign markets for United States industry will be opened up by Allied control of German industry, provided at the Potsdam parley. Page 69.

Delay in Oil Pact Conclusion—Change from the Churchill government in England is not expected to alter any provisions in the Anglo-American oil pact although final decisions likely will be delayed because new Laborite officials will have to study its details. Page 69.

European Army Pipe Lines—An average of 3,800,000 gallons of gasoline daily was pumped through the three major Army pipe line systems from French and Belgian ports to American armies at the peak of military operations in Europe, it was disclosed last week. The three systems included 2380 miles of 6-inch and 1440 miles of 4-inch pipe.

Important Oklahoma Strike—Cities Service Oil Company's Lawson 1, McClain County, Oklahoma, is the state's deepest strike and may be one of the most important in recent years. Page 79.

War's Depletion of Raw Materials Topic of Probe

Creation of a special committee to investigate the depletion of domestic supplies of raw materials during the war period was proposed in the Senate August 1 by Senator Tom Stewart of Tennessee, but no action will be taken until Congress reassembles in October.

Stewart's resolution calls for the appointment of a five-man committee to ascertain the extent of the wartime depletion and its effects upon postwar production.

Principal resources affected by war demands include petroleum and iron.

The resolution would require the committee to file a report promptly, making recommendations concerning the development of new sources of supply, conservation of existing sources, "and such other measures as may be necessary to counteract the effects of wartime demands upon the nation's resources."

Ickes' Retirement Might Mean PAW Independency With Davies as Head

Expectations that Secretary of the Interior Harold L. Ickes will divorce himself from the administration within the near future have aroused speculation in Washington as to the effect of such a move upon PAW leadership.

Admitting that it will be difficult to get a man to head the department who will have Ickes' ability to juggle a score of job assignments at one time, it is generally believed that it may be necessary to set up PAW as an independent agency.

For more than a year, PAW has been practically independent, under the leadership of Deputy Administrator Ralph K. Davies. Ickes, with entire confidence in Davies' policies and ability, has taken little or no part in the administration of PAW for many months, beyond "fronting" for the agency at PIWC meetings and other places where the authority of a top-rank official was needed.

Davies, himself, has said nothing about what he might do in the event the leadership of the Interior Department changed hands, but there is a general impression that he would resign as deputy administrator should a new secretary be appointed with authority over PAW. However, should PAW be given independent status, with himself as head man, it is believed he would stay on the job until the end of the war.

Both Ickes and Davies have worked to keep PAW free of politics and political influences, and it is not believed the latter would care to remain in Washington should President Truman select Ickes' successor on the basis of political expediency.

If Davies goes, it is said, the exodus

of officials from PAW will look like a rainy-night rush for the last bus home and the industry-government relationship which made the wartime oil program possible will suffer at a time when PAW is just launching one of the biggest jobs in its history—that of selling the public the idea of continuing its oil sacrifices whole-heartedly for the last lap of World War II.

Backing Up of Stocks Newest Threat in East

The backing up of fuel oil stocks threatens to thwart maximum use of the tankers which have been put into temporary service to the East Coast, PAW warned last week.

Urging householders to fill their tanks promptly and calling on dealers to move heating oil as rapidly as possible, Deputy Administrator Davies pointed out that ocean terminal storage facilities are less than normal and may be overtaxed until oil moves out steadily.

Increased activities in the Pacific may require the withdrawal of these tankers in the near future, he pointed out.

Latest figures on District 1 oil receipts show that tankers delivered 4,569,000 barrels to East Coast ports during the week ended July 28, compared with 3,050,000 barrels the previous week. Of these arrivals, 2,171,000 barrels were from Gulf Coast points and 2,398,000 barrels from Latin America.

Tank car shipments to the East Coast during the week averaged 287,017 barrels daily, compared with 307,214 barrels daily the previous week, while the Big Inch pipe line delivered an average of 319,506 barrels daily of crude, against 320,070 barrels, and the Little Big Inch an average of 185,377 barrels of products against 171,342 barrels.

Full Year's Work Latest Guarantee in WLB Case

In an action which may have wide effect in determining postwar labor policies, the War Labor Board last week ordered a guaranteed full-employment plan inserted in a union contract.

In the case before it, the board decision, from which industry members dissented, ordered a shoe company operating a chain of retail stores in New York to guarantee 44 hours of work weekly for 52 consecutive weeks per year for its regular full-time employes, and five nights and a Saturday weekly throughout the year for regular part-time workers.

The board last November indicated that it would approve any reasonable full-employment plan agreed to by unions and employers, although it rejected a union-requested clause guaranteeing 50 40-hour weeks in the Big Steel case. In its decision last week, the board said the clause sought by the union is the standard contract for the industry in New York and that the company subscribed to it in practice, but did not wish to be bound by contract to a plan barring lay-offs irrespective of needs.

Texas Seeks Improvement In Gas Accounting System

The Texas Railroad Commission last week moved to improve its gas accounting system and called a special statewide hearing for August 29 to begin the first phase. This hearing will be concerned with jetting gas and operators will be asked to assist in determining answers to these questions:

1. Whether it is possible to make accurate checks and reports on gas lift wells.
2. Whether the commission can check the wells to account for gas used for jetting and gas lift operations.
3. Whether a new report should be devised to account for gas used for this purpose.

The commission has been doubtful of the accuracy of reports filed purporting to account for jetting gas. There is a question in some fields as to how much gas is used and whether the residue is returned to the sands indicated on the reports filed.

Possibly some new report can be worked out comparable with the EB report used currently for oil. A significant feature of this report is that it requires listing of overproduction of crude oil. In the event it would be adapted to gas, excess production of gas would be shown likewise.

Aviation Gasoline on WPB "Must Watch" Critical List

Crude petroleum, lubricating oil, aviation gasoline, petroleum fuels of all kinds, petroleum sulfonates and gasoline dispensing hose continue to be highly critical in supply, WPB disclosed.

In its latest revision, the board added a new list of materials to be closely watched, including natural gas, aviation gasoline and seamless pipe and tubing. Items on this "surveillance list," it was explained, are in approximate essential demand-supply balance, but are products which WPB believes must have preferential treatment in order to maintain their present position or which, by reason of some potentially increased demand, may become critical in the future.

Canadian Oil Production Gains During War Years

Canadian production of petroleum, which was increased from 7,826,000 barrels in 1939 to 103,365,000 barrels in 1942, amounted to 10,071,000 barrels last year and for five years in which Canada was in the European war aggregated 49,000,000 barrels, it was disclosed last week by the Canadian Wartime Information Board.

However, it was pointed out, the war effort, despite the rationing of civilians, increased Canadian requirements for petroleum fuels from 39,000,000 barrels in 1938 to 54,700,000 barrels in 1944, increasing the extent of Canada's dependence upon the United States and Caribbean producing areas.

The dominion also increased its production of natural gas, running it up from 41,232,000,000 cubic feet in 1940 to 45,957,000,000 cubic feet last year, the report stated.

Canadian production of synthetic rubber started at the end of September, 1943, and 2554 long tons was produced during the remainder of that year, and 34,831 tons last year, of which 11,055 tons was exported.

The report showed that 1944 imports of crude oil had a value, Canadian, of $72,000,000, and receipts of gasoline were valued at $13,200,000.

Pressure Maintenance Plans For West Edmond Get Boost

With the naming of Weston Payne, superintendent for Anderson-Prichard Oil Corporation, as chairman of a committee to conduct preliminary work, operators in the four-county West Edmond oil pool of Central Oklahoma have taken the initial step in unitization of the area for the purpose of working out a pressure maintenance program. Operators who recognize the need for early action in maintaining bottom-hole pressures in the field believe that by adopting a comprehensive repressuring program in the early stages of production the Hunton lime will produce millions of barrels of oil which otherwise will be lost.

State authorities signified their approval by adoption during the last legislative session of a bill making unitization for such projects mandatory where a majority of land and royalty owners agree to it.

Natural Gas Operators Are Allowed Tax Leeway

Internal Revenue Bureau regulations relating to the computation of nontaxable income from natural gas properties under the depletion provisions of the Internal Revenue Code have been revised to permit operators to use their own methods of computing profits, where such methods differ from those laid down in the regulations.

Arabian American Company Officers Are Reelected

Officers and directors of the Arabian American Oil Company, operating in Saudi Arabia, were reelected at the annual meeting in San Francisco.

Those named were H. D. Collier, chairman of the board; W. S. S. Rodgers, vice chairman; F. A. Davies, president; J. T. Duce, J. MacPherson and A. M. Martin, vice presidents; J. H. McDonald, secretary and treasurer, and Col. H. D. Klein, A. N. Kemp, C. E. Olmsted and J. M. MacGaregill, directors.

Arabian American is jointly owned by Standard Oil Company of California and The Texas Company.

Delay Seen in Oil Pact Negotiation Following Labor Victory in England

Washington officials concerned with the Anglo-American petroleum agreement believe that the change of government in England will have no effect upon British policies as developed last year during negotiation of the document now undergoing revision, although they foresee possible delays in the projected discussions in London because new people will be brought into the matter.

In informal discussions, it is admitted that a great deal of thought has been given the effects of the change to a Labor government and that no information has yet been developed which would give any indications. However, it was said, a careful study of the provisions of the agreement in the light of the election results gives no ground for apprehension that they can be construed in a way which would run contrary to the known principles of the new government.

Although some British Labor Party leaders have insisted the oil pact smacks of imperialism and that American capitalists are trying to use it to exploit Near East petroleum, it is pointed out there is nothing in the agreement which would affect England's internal position or her international trade. On the other hand, provisions calling for development of foreign oil resources in such a way as to benefit backward countries is well in line with the Labor Party's platform for the improvement of the workers' position. Further, there were three labor representatives in the Churchill government with which the original agreement was negotiated.

The principal drawback to speedy consummation of the revised treaty is seen as the introduction of new officials into the negotiations, men who are unfamiliar with the subject and the situation and who will have to learn all about it before they can act intelligently.

The British election, however, tips the scales to the left and much of Europe will follow the trend, British support heretofore having kept conservative groups in power in many countries. Nations of other continents also will be encouraged to swing to the left. This will have a broad impact upon world business economics.

There may be a trend toward nationalization or government control of natural resources, transportation and international trade. The British Labor Party has advocated nationalization of these industries, and other countries will feel more inclined to do likewise. Widespread expropriation is not to be expected of American oil holdings abroad, but future expansion of American oil companies might be curbed in all but a few countries.

RFC Offers Huge Quantity Of Surplus Oils, Greases

Large quantities of lubricating oils, greases and other petroleum products declared surplus by federal agencies will be sold by the Reconstruction Finance Corporation August 15, on the basis of informal written offers.

Offered for sale are 250,000 gallons of lubricating oils, in lots ranging from 112 to 78,490 gallons; more than a million pounds of lubricating greases, in lots ranging as high as 306,145 pounds, and smaller quantities of hydraulic fluids, shock absorber fluids, quenching oils, grinding and cutting compounds and other products.

A detailed list showing quantity, grade, condition and standard use of each lot (List No. W-PP-2) may be obtained by writing to the nearest RFC regional office. Bids also should be sent to the regional offices, rather than to Washington, and may be submitted on any lot, regardless of where it may be stored.

American Gas Will Hold Annual Meet in October

The 27th annual meeting of American Gas Association will be held on October 24, 1945, at the auditorium of the Engineering Societies Building, 29 West 39th Street, New York.

"To impose a minimum burden on transportation facilities which are needed for the armed forces and to obviate need for hotel accommodations," the association again will limit its yearly convention to one day.

Officers will be elected in the morning and committee chairmen will make their reports.

Book Delayed

Publication of "Important Oil Fields of North Louisiana, South Arkansas, Mississippi and Alabama," announced for early August by the Shreveport Geological Society has been delayed until September 30, W. E. Wallace, secretary-treasurer, has announced. Wartime shortages and other problems caused the postponement.

Potsdam Policies Provide for Strict Control of Germany's Oil Industries

Allied control of German industry, including export and import trade, will open up new domestic and foreign markets for United States industry, observers in Washington believe following study of last week's big three report on the Berlin parley.

The nine economic principles laid down in that report provide for control of German foreign trade and of scientific bodies, research and experimental institutions, laboratories and other facilities connected with economic activities, and elimination of cartels, syndicates, trusts and other monopolistic arrangements.

These measures are expected to open up to American exporters European and other markets in which they have been barred or restricted under prewar cartel argeements providing for a division of world markets, and permit the manufacture and distribution in this country of commodities and products which were suppressed before the war under such arrangements.

Just how much of what Germany will be permitted to export will be determined at some future time when control of the country by the four allies shakes down, but there is every indication that the Germans will not be permitted to export anything in volume sufficient to enable them again to influence world trade to the extent they did before the war.

That Germany's oil industries will be strictly controlled is indicated not only by the nine economic principles but by the provisions for reparations which give Russia the right not only to take industrial equipment from its own zone of occupation as reparations, but to obtain 15 percent of certain equipment from the metallurgical, chemical and machine manufacturing industries in the zones of the other allies, in exchange for products needed in Germany, including petroleum, and additionally, without payment, 10 percent of such industrial capital equipment in the western zones as is held unnecessary for the German peace economy and will be removed. The remaining 90 percent of such unnecessary equipment will be transferred to the other allies or destroyed.

Under this and other features of the big three program, Germany no longer will be a major competitor of United States industry in international trade, and will be shorn of all influence upon our domestic markets such as it exerted before the war through its cartel and other agreements with American manufacturers.

Butane No Easier

Lifting of WPB restrictions on the production of gas stoves will not be accompanied by any relaxation of the restrictions on the use of propane and butane, PAW announced July 31.

Liquefied gas supplies next winter may be even tighter than in the past, it was declared, because of demands for butane in the production of synthetic rubber and aviation gasoline and for propane in war plants.

Pipe Line Investigation No. 4

Another pipe line probe is scheduled this fall and winter by the Senate Interstate and Foreign Commerce Committee which last week proposed an investigation of all means of interstate and foreign transportation to determine the interrelation of the various transportation agencies, the postwar character and adequacy of services rendered by each and the developments and improvements that may be expected, and to recommend appropriate legislation.

The Senate investigation would parallel that proposed by the House Interstate and Foreign Commerce Committee, action on which has been postponed until October, except for a provision which would permit members of the latter to make world tours in the course of their studies.

The Senate plan would bring to four the number of inquiries to be made into the question of pipe line transportation of natural gas and petroleum. Federal Power Commission's natural gas investigation and the Senate Petroleum Investigating Committee's inquiry on disposition of war-built pipe lines are the other two.

As the Senate prepared to adjourn August 1, Senator James M. Mead, of New York proposed that the transportation probe be conducted by a special committee of three members, each, from the Interstate and Foreign Commerce Committees.

Mead's outline would be along that proposed by the Interstate Commerce Committee but would also go into the desirability of subsidies and problems of taxation.

Integration of Agencies Needed in Postwar Period

One-man control over WPB, OPA, and WMC, to be bested in the Director of War Mobilization and Reconversion, was recommended last week by Senator James M. Mead of New York, chairman of the Senate War Investigating Committee.

Need for a strong control will be marked particularly in the reconversion period, Mead declared in the report, and, he added, the government should speed preparations for the transition period.

Mead criticized the present set-up, declaring that the OWMR should be exercising a strong control over policies and programs rather than merely "umpiring" disputes.

In the event of a sudden end of the Japanese war—a not unexpected development—the country might run into real trouble and serious unemployment if industry and the government are not ready to absorb workers released when war production shuts down, he said.

The committee charged that our interests abroad are not yet receiving sufficient attention, recommended that civilian agencies dealing with foreign governments and peoples be "integrated under the Secretary of State."

Standard (Indiana) to Push Chemical Products Sales

Standard Oil Company (Indiana) has announced organization of a chemical products department to explore the market for petroleum chemicals, work with research and manufacturing departments in developing and producing marketable derivatives, and manage sales and distribution.

Bruce K. Brown, former refining head of PAW, vice president in charge of development, will be general director and William B. Plummer, manager. Plummer was formerly manager of Standard's development and patent department and during the war, until recently, in the Air Technical Service Command. Howard R. Peterson, member of Standard's sales technical service, will be in charge of sales development. Other staff members are being selected.

Use of new synthetic and catalytic processes for manufacturing petroleum products has reached a degree of importance overshadowing that of older methods of refining, Plummer pointed out. These processes are making new chemical by-products available.

Davies Warns Against Coal-to-Oil Conversion

Coal consumers who plan to convert to oil because of the looming coal shortage will not be permitted to cut into the limited petroleum supplies of home owners who for the fourth winter will be restricted to 75 percent of their normal requirements, PAW announced last week.

There is no chance whatever of increasing heating oil rations this year, and indications point to great difficulty in maintaining present levels in the face of an 8,400,000 gallons daily higher military demand, Deputy Administrator Davies said. The coal supply is expected to be cut only 20 percent as compared with the 25 percent shortage in oil.

Tax Evasion Drive Gets Federal Agency Attention

A campaign against black marketers which, it was indicated, may spill over into a drive against tax evaders generally was planned last week by Secretary of the Treasury Fred M. Vinson, Attorney General Tom C. Clark, Secretary of Agriculture Clinton Anderson and Acting Price Administrator James G. Rogers, Jr.

The drive will be stepped up within a month, and every United States attorney has received definite instructions from Clark to give such cases priority and, where possible, to direct them personally.

While both types of violation frequently are personified in the same individual, Clark said, the campaign will not be limited to such instances, and it was indicated that a number of tax evasion cases, in which black market operations are not involved, are under consideration.

Nevada Area Unfavorable For Oil, Survey Declares

Petroleum producers were warned by the United States Geological Survey July 31 that the character and altered condition of the underlying sedimentary rocks on the west side of Las Vegas Valley near Arden, Clark County, Nevada, are "unfavorable for the occurrence of oil and gas in commercial quantities."

The survey's conclusion was incorporated in a report on a recent geologic reconnaissance of the Arden area by J. C. Miller. The report is accompanied by a generalized geologic map of an area of about 140 square miles in and adjacent to Twps. 22 and 23 S., R. 60 E., Mount Diablo meridian, which indicates the area distribution of the various stratigraphic units, the structural attitude of the exposed rocks, the position of the principal folds and faults affecting them, and the location of the two wells heretofore drilled for oil and gas within the area.

The report, not printed for distribution, may be consulted in the Survey offices at Washington, Las Vegas, Nevada, Salt Lake City or Los Angeles.

Agencies Prepare for Probes

Cued by recent criticisms of many of the war programs, a number of federal agencies are taking advantage of the congressional vacation to plan their defenses for the many investigations in the making.

Practically every emergency agency, from the Alien Property Custodian to the War Production Board came under congressional fire in the last days of the session, more than a score of investigations already have been approved by House or Senate and notice has been given that about as many more will be pressed this fall and winter.

Several of the inquiries will get into the field of oil, but none of them is directed critically at PAW. For the most part, the oil studies will be devoted to a projection of production reserves and other basic facts into the postwar future, the oil policy to be adopted by the government and similar matters.

Stocks Reduced as Demand For May Tops Production

Domestic crude production in May reached a new record of 4,870,000 barrels daily, an increase of 70,000 barrels over the April output, the Bureau of Mines reported.

Daily average demand for domestic crude, however, was 4,953,500 barrels, 160,800 barrels above April and 131,900 barrels over the former record, established in February, necessitating withdrawals from stocks of 83,000 barrels daily. This canceled most of the March-April gain and reduced stocks from 229,644,000 barrels to 228,214,000 barrels during the month.

Crude runs to stills also set a new record at 4,913,000 barrels daily, an increase of 139,000 barrels over April, 59,000 barrels of which was recorded in the California district where runs of 941,000 barrels daily made a new high record.

The yield of gasoline from crude was unchanged at 40.3 percent, with total deliveries of military and civilian motor fuel at approximately 72,000,000 barrels, or 13 percent greater than in May, 1944. Total stocks of refined oils amounted to 218,564,000 barrels on May 31, a decline of 1,879,000 barrels during the month.

The Bureau of Labor Statistics placed the price index for crude and products at 64.2, the same as in April, compared with 64 in May, 1944. The crude capacity represented by the refinery data in the report was 5,073,000 barrels, indicating an operating ratio of almost 97 percent, compared with 92 percent a year ago.

Huge Values Disclosed in Foreign Petroleum Trade

The United States government, from July 1, 1940, through March 31, 1945, spent $11,437 million abroad, more than half of it for supplies and materials largely for war production and civilian uses in this country, Foreign Economic Administrator Leo T. Crowley said July 31.

Included in this total was $451 million spent for rubber, including tires and tubes.

The report showed that the United States government furnished $39 billion worth of lend-lease aid during the period and shipped $373 million of relief supplies for use abroad, mainly through the U. S. Army.

Petroleum products furnished under lend-lease had a value of $1890 million, of which $1790 million went to the British Commonwealth, $3 million to China, $84 million to Russia and $13 million to other countries. Under reverse lend-lease we received petroleum products valued at $977 million of which $793 million was from the United Kingdom and colonies, $3 million from New Zealand and $181 million from India.

The relief supplies furnished by U. S. included fuel, petroleum and products to the value of $20 million.

Oil Field Training Discontinued; British and Dutch Take Over Areas

United States forces will have no part in the rehabilitation and re-activation of oil fields in the Pacific theatre of war as they are recovered from the Japanese. (See also page 48.)

All such operations will be left to the countries which own the fields—Britain and the Netherlands—although military authorities are, of course, anxious to get the oil which they can produce, so as to reduce the amount which must be hauled from the United States and Caribbean.

Original plans of the military for the re-conquest of Pacific areas invaded by the Japanese did contemplate the use of special service units to get into oil fields and put them into operating shape as soon as possible.

Special Units Disbanded

Special units were set up including an oilfield battalion, a refinery tank construction and pipe-fitting company, and a refinery battalion, and were given training in California oil areas, but the organization was broken up about a year ago, before it had ever engaged in any actual operations, when it was decided that the handling of liberated oil fields should be left to the owning countries.

FPC Changes Hearings

The FPC has changed the date for its hearing on the application of Kansas-Nebraska Natural Gas Company, Inc., which was to have been held in Washington August 15, and will open it at Kansas City the following day. Hearing on the case of Independent Industrial Gas Company vs. Cities Service Gas Company has been advanced from September 6 in Washington and will open August 20 in Kansas City, and the Kansas City August 7 hearing on the Cities Service Gas Company application has been postponed until August 22.

Crude Oil Production in the United States

(Estimates compiled by The OIL WEEKLY. All figures indicate daily averages, in barrels.)

STATE OR DISTRICT	PRODUCTION IN WEEK ENDED August 4	July 28
Alabama	1,000	1,000
Arkansas	79,550	79,750
California	951,500	949,700
Colorado	12,150	11,800
Florida	200	200
Illinois	204,000	199,900
Indiana	13,300	13,350
Kansas	257,550	278,450
Kentucky	29,950	29,600
Louisiana	366,100	367,250
North	70,400	70,400
South	295,700	296,850
Michigan	47,700	45,300
Mississippi	52,750	51,650
Missouri	100	100
Montana	23,585	24,185
Nebraska	850	850
New Mexico	103,700	104,100
New York	13,200	13,250
Ohio	6,450	6,350
Oklahoma	390,850	390,400
Pennsylvania	35,600	36,200
Tennessee	35	35
Texas	2,222,700	2,209,350
Upper Gulf Coast	567,650	568,900
East Texas Field	380,950	379,500
Rest of Eastern Texas	145,600	139,050
Lower Gulf Coast	255,650	255,400
Southwest Texas	83,850	83,750
South Central Texas	21,600	21,500
West Texas	526,600	521,400
North Texas	152,800	152,350
Panhandle	88,000	87,500
West Virginia	8,000	8,000
Wyoming	114,650	114,900
Total United States	4,935,470	4,935,670

Pratt Resigns Positions With Standard (New Jersey)

The retirement of Wallace E. Pratt as a director and member of the executive committee of Standard Oil Company (New Jersey), has been announced by Ralph W. Gallagher, chairman of the board.

One of the world's outstanding geologists, Pratt rose in the practice of his profession to attain a most important management position in the oil industry. He was elected director of Jersey Standard in 1937 and vice president in 1942, a position which he relinquished last fall.

Pratt joined Humble Oil & Refining Company, now a Jersey Standard affiliate, in 1917 as chief geologist after previous geologic work for the Philippine government and for another oil company. He was elected a director of Humble in 1923 and in 1933 became vice president. He left Humble in 1937 to go with Jersey Standard.

Last April Pratt was honored by the American Association of Petroleum Geologists as the first recipient of its Sidney Powers Memorial Award for outstanding contributions to petroleum geology.

Anderson Named to Direct WSA Tanker Operations

Appointment of Roy E. Anderson as director of the division of tanker operations of the War Shipping Administration was announced July 31. He will succeed J. W. Bancker, on loan to WSA from Socony-Vacuum Oil Company since August, 1941, who has resigned to become vice president of American Merchant Marine Institute, Inc., in New York.

Anderson also came to WSA from Socony-Vacuum Oil Company and has been serving as assistant director for tanker operations, in which position he will be succeeded by L. A. Smith, formerly with Standard Oil Company of California.

Fallacy of Cheap Products Exploded As Economist Cites Petroleum Danger

THE laws of exchange do not permit any advantage through cheap products. For example, if we pay $1.50 per barrel for petroleum produced in the United States we have a market of $1.50 for each barrel we produce. If we buy it for 75 cents per barrel abroad, we pay less per barrel but in turn reduce our exchange market to exactly 75 cents. We gain nothing and lose the right to produce.

Thus the fallacy of cheap products is exploded by Carl H. Wilken, economic analyst for the Raw Materials National Council and National Association, in "The Petroleum Industry is in Danger," a paper being distributed by the Independent Petroleum Association of America.

Production of raw materials of all kinds is the basis of prosperity according to the author. Cheap prices tend toward depression and certainly stifle industry. Research work of the Raw Materials National Council, of Sioux City, Iowa, a research organization, establishes the fact, according to Wilken, that our raw material production is the source of both our jobs and the new income which operates our economic machine. The rest of our economy, other than raw material production is the result rather than the cause. To destroy our raw material production means to destroy our income, our standard of living which we have enjoyed, and finally the economic freedom which has supported our form of representative government.

Petroleum Penalized

At a time when the nation needed both materials and dollar income to win the war, mineral production which includes petroleum was produced at a price that shortchanged the industry approximately $2 billion per year. The petroleum industry was penalized by less than parity prices. On the basis of 1925-1929 averages the price for crude petroleum at the present time should be approximately $1.25 per barrel. On the basis of 1926 prices it would be considerably higher.

The policy of exporting manufactured goods in exchange for foreign raw materials which apparently is being considered by the National Planning Association in Washington, if put into practice, will force many of our raw material producers out of business. Only those with high grade properties would be able to exist at the low price level that would automatically result from any attempt to compete with cheap foreign labor.

According to the author, this policy is based on three reasons: That we must conserve our raw material resources; that we can buy cheaper abroad; and through a lack of understanding of our economy.

In examining these reasons, Wilken contends that the conclusion that we must conserve our raw material production is without foundation. Our agricultural production, for instance, during the war has been 40 percent above that of the 1925-1929 period and the theory that our soil is unable to supply a continuous flow of food is not based on fact.

Mineral production, it is also pointed out, from our mines and oil wells has also kept pace even in spite of the handicaps imposed by lack of materials for development, and also shortage of manpower. Yet the supply of metals and oil in the United States is unknown to anyone. Only development can tell the story. Our supplies of petroleum can be supplemented by the billions of tons of oil shale and coal. In addition there is always the possibility of new fuels resulting from man's inventive genius.

Our mineral supply has been hardly touched, provided we are willing to pay an American price for its production. The worst kind of conservation is a program which will permit only our high grade properties to operate. This kind of conserving practically eliminates the use of petroleum and minerals which could be produced in submarginal properties. In other words, the conservation program of the planners means destruction of many of our raw material resources.

Any reduction in our raw material production means a lower national income, says the author. It will mean the investment of our capital in foreign lands and ever increasing importation to pay the capital loans and interest charges; shutting off new investment capital for the development required by a growing nation; the decay of many raw material producing properties now in operation; unemployment and finally the wiping out of our system of free enterprise as the result of domination of internationally-owned raw material producing cartels.

The fallacy that we can buy cheaper abroad only means that in trying to do so we gain nothing and lose the right to produce. Following this practice of buying cheap raw materials, an end result will be that American industry will have to support unemployment from the cheap 75-cent market in other lands. It is a sure road to national bankruptcy, believes the author. President Lincoln, he says, once stated approximately as follows "If we produce something ourselves, we have both the goods and the money." The matter of price is merely relative and cheap price means a cheap nation and a cheap standard of living.

Prices and Living Costs

The apparent fallacy of higher prices and yet lower living costs is analyzed in studies of the Raw Materials National Council. Since 1921, it is noted, each dollar of farm income in the United States has created one dollar of factory payrolls and seven dollars of national income. Furthermore, the income created from new farm production permeates out with mathematically regularity to all groups.

For example, for each dollar of farm income there will be 50 cents of transportation income, 50 cents of mineral production, a dollar of factory payrolls, $4.50 of retail sales and approximately $5.60 of value of manufactures. The agricultural committee of the United States Chamber of Commerce, in their 1944 report, point to the fact that agricultural income seems to run quite steadily as one dollar of farm income to seven dollars of national income.

Research also indicates that for each 1 percent that farm prices are below parity, our nation will have 1 percent unemployment. In translating this formula to all raw materials, the ratio is approximately a five-times turn of all raw material income. In other words, with petroleum at $1.50 per barrel, the nation will have five times that in national income, or $7.50 from each barrel produced. If we reduce the price to 75 cents per barrel, we will create five times that amount of $3.75 per barrel. There is no such thing as cheap raw materials.

"Governor" on Machine

Lack of proper evaluation of the operation of our economy by the planners is especially true of our raw material production. They take raw materials as a matter of course, says the author, and fail to recognize that raw material production and price are the governor on our economic machine.

A simple oversight is the cause of this error. In our capital form of economy, where our capital is invested is the important matter. More than two thirds of invested capital is in productive enterprise, that is in raw material production.

As an example, the entire capital investment in steel and automobile production in 1940 totaled approximately 6 billion dollars. The capital paid in the surplus and undivided profits of all commercial banks in the United States and including our Federal Reserve banks was approximately $9.5 billion as of July 1, 1944. In other words steel, the auto industry and our entire banking system has a capital investment of $15 billion.

Agriculture alone with its land, equipment, livestock, buildings and seasonal carry-over of feeds has a present investment of approximately 83 billion dollars. In other words when the prices of raw materials are reduced, we destroy the capital earnings on approximately two thirds of our capital economy. In spite of this, our economists try to wag the raw material production by wiggling the industrial tail.

The same thing is true from the standpoint of employment. Steel and the automobile industries together in 1940 employed about 1,000,000 laborers. On the other hand agriculture alone employed approximately 10,500,000.

From these factual relations, the Raw Materials Council has pointed out that the annual income of the United States can be predetermined by a simple equation, namely, that *the total labor force divided by the number producing raw materials, times the raw material income will be the national income at any period in the future.*

West Edmond Studied

R. M. Swesnik, Gulf Oil Corporation, Oklahoma City, presented a detailed study of the West Edmond geological structure before the Oklahoma City Geological Society. Written as a thesis for a master's degree, the study covers more than 600 seismograph and electrical logs with tops of 15 formations picked on each well, or an average of 21 subtractions made on each well, a total of 12,600.

Stocks of Crude Register Increase Despite Drop in Daily Average Output

A few changes were noted in the trend of supply and demand of crude and its products during the week ending July 28, the most notable of which was an increase in total stocks of crude amounting to 1,753,000 barrels. This gain was in the face of a drop in daily average production of 14,000 barrels and an increase in crude run to stills of 69,000 barrels daily.

Stocks of gasoline also increased 78,000 barrels, but production of gasoil dropped 492,000 barrels. Stocks of distillate increased 613,000 barrels. In contrast with the lowered production of gasoil, the yield of residual fuel was up 515,000 barrels. Total stocks of this product, however, dropped below last week's figure by 197,000 barrels.

Thus the production trend of crude oil was down this week instead of up, total crude accumulations gained over the previous week, and the total accumulation of distillate gained as compared with the two previous weeks.

These temporary variations do not change the general trend of the year however, which is increasing production and runs to stills, with steadily dropping crude stocks; steady gains in production of gasoline, accompanied by a slow buildup in stocks; a decrease in production of gasoil with consequent loss in stocks of distillate; and a notable increase in production of residual fuels, but declining stocks of these products.

As has been pointed out before, the swing in demand to fuel oils in the Pacific war is resulting in stock losses, notwithstanding heavy gains in output. Also there has been no drop in gasoline consumption in reality, because less crude can be used to charge stills for production of gasoline, due to the fuel oil demand, and what appears to be an improvement in the gasoline situation is not backed up by any strong increase in stocks.

In general, the picture for the year as compared with last year is one of encouraging stability. In percentage of change as compared with 1944, production of crude oil is up 7 percent; runs to stills, up 7.9 percent; stocks of crude, down 3.2 percent; weekly production of gasoline, up 14 percent; stocks of gasoline, up 5.8 percent; weekly production of gasoil and distillate, down 4.2 percent; stocks of distillate, down 4.6 percent; weekly production of residual fuel, up 9.8 percent; stocks of residual fuel, down 25.4 percent.

The only significant change is in stocks of residual fuels, and these are due to further decreases as the tempo of the Pacific war is stepped up and more transportation facilities diverted to the Pacific.

Residual fuel oil and distillate fuel stocks on the East Coast are being increased in anticipation of the demand for oil for heating this winter, which demand will begin to make itself felt within the next two months.

"Tight" Drilling Protested By Oklahoma Landowners

Landowners who gave leases for the drilling of a well in Oklahoma now seek to have the leases cancelled because the operator declines to divulge drilling information.

The Superior Oil Company of California may be cited before the Oklahoma Corporation Commission for its "tight hole" policy in connection with the drilling of Manning 1, NE NE NW 27-22n-10w, in Major County. The well is now testing and showing considerable oil.

Landowners in the vicinity of the well, which is near Ringwood, are circulating a petition to the State Corporation Commission and a notice to Superior, protesting lack of information. They have notified the operator they intend to ask the courts to cancel leases if they are not furnished information as to the condition, development and progress of the test well.

Trends of Operations and Changes in Stocks

Figures on crude stocks are from Bureau of Mines weekly reports; all others from American Petroleum Institute weekly reports, which are estimates on Bureau of Mines basis.
(All figures in thousands of barrels—add 000)

HIGHS AND LOWS OF RECENT YEARS

ITEM	Crude Oil Prod. Barrels Daily	Crude Oil Prod. Week Ended	Runs to Stills Barrels Daily	Runs to Stills Week Ended	Crude Stocks Barrels	Crude Stocks Week Ended	Gasoline Stocks Barrels	Gasoline Stocks Week Ended	Gasoil and Distillate Stocks Barrels	Gasoil and Distillate Stocks Week Ended	Residual Fuel Oil Stocks Barrels	Residual Fuel Oil Stocks Week Ended
Highs:												
1941	4,337	11-22	4,120	10-18	266,187	3-29	99,727	3-29	[1]54,983	11-15	102,448	1- 4
1942	4,337	2- 7	3,961	1- 3	263,208	3-28	[1]109,281	3-14	47,861	11-14	95,857	1- 8
1943	4,436	11-13	4,331	12- 4	245,752	5-29	94,159	3-20	47,187	11-27	72,881	1- 2
1944	4,762	9-30	4,798	12-30	240,992	1- 1	89,162	4- 1	48,863	10-28	64,744	10- 7
1945	[1]4,944	7-14	5,006	7- 7	224,079	6- 2	99,012	3-24	38,298	1- 6	56,074	1- 6
Lows:												
1939	[2]1,601	8-26	3,125	2-18	[2]229,127	10-12	71,152	10- 7	20,722	4-15	105,397	4- 3
1941	3,364	1-11	3,490	1-18	240,399	11-15	79,923	10- 4	28,382	4-12	90,914	7-13
1942	3,297	7- 4	3,393	5-23	231,896	12-12	75,934	12- 5	29,240	4-25	72,962	12-26
1943	3,821	1- 9	3,579	3-18	232,191	1- 9	68,182	10-16	30,732	4- 3	57,596	12-25
1944	4,357	1- 1	4,228	2-12	220,258	9- 9	76,302	1- 1	30,232	4-19	49,737	3-18
1945	4,678	1- 6	4,656	1- 6	216,355	7-14	85,401	7-14	26,483	3-17	38,548	5-26

TRENDS OF 1944 AND 1945

Trends in Week Ended:	Crude Oil Production Daily	Crude Oil Runs to Stills Daily	Crude Oil Stocks Week End	Gasoline Production Weekly	Gasoline Stocks Week End	Gasoil and Distillate Production Weekly	Gasoil and Distillate Stocks Week End	Residual Fuel Production Weekly	Residual Fuel Stocks Week End
1944:									
January 1	4,357	4,453	240,992	13,192	76,302	4,575	42,310	9,141	57,380
January 29	4,400	4,359	240,251	13,427	81,075	4,054	37,266	8,889	52,857
February 26	4,423	4,377	237,137	13,183	85,248	4,558	33,766	8,952	51,387
March 25	4,385	4,443	236,285	13,362	87,287	4,979	31,319	9,018	51,669
April 1	4,383	4,435	234,667	13,824	89,162	4,450	30,530	8,367	51,326
April 29	4,431	4,300	235,342	13,126	88,342	4,284	30,236	8,398	49,985
May 27	4,514	4,532	234,423	13,502	86,468	4,702	32,035	8,568	49,812
July 1	4,587	4,638	228,860	14,052	83,559	4,496	35,360	8,872	52,235
July 29	4,608	4,627	225,112	14,115	82,665	4,833	38,135	8,900	56,280
August 26	4,667	4,698	222,931	14,112	80,740	4,566	41,453	8,680	59,839
September 30	4,762	4,775	222,393	14,494	78,028	4,622	45,329	9,292	64,226
October 28	4,740	4,658	223,235	14,117	79,058	4,772	48,705	8,985	64,382
December 2	4,712	4,693	221,591	14,853	80,427	4,082	45,832	8,981	61,727
December 9	4,704	4,552	220,258	14,611	80,880	4,056	44,430	8,923	60,458
December 16	4,695	4,537	222,075	14,145	82,747	4,353	42,413	8,727	59,280
December 23	4,729	4,682	222,575	14,635	83,355	4,605	40,846	8,798	58,509
December 30	4,705	4,798	222,998	15,342	86,614	4,257	39,495	9,156	57,430
1945:									
January 27	4,727	4,756	221,310	14,957	88,223	4,843	33,651	9,252	51,119
February 24	4,777	4,803	219,351	15,500	95,972	4,958	28,753	9,084	46,713
March 31	4,781	4,677	223,782	14,644	98,758	4,548	26,889	9,184	41,745
April 28	4,805	4,780	223,474	14,633	94,068	4,636	28,273	9,379	39,813
May 26	4,887	4,950	222,831	15,194	89,121	4,667	29,184	9,670	38,548
June 2	4,859	4,804	224,079	15,317	88,696	4,857	29,819	9,437	39,022
June 9	4,853	4,827	221,552	15,256	87,896	4,842	30,339	9,382	38,996
June 16	4,888	4,915	221,932	15,132	87,504	5,342	30,397	9,252	39,482
June 23	4,898	5,002	220,974	15,367	87,462	5,014	31,761	9,558	39,893
June 30	4,903	4,999	220,781	15,546	86,472	4,910	32,213	9,077	40,488
July 7	4,886	[5]5,006	217,250	15,082	86,329	4,875	33,667	9,238	40,754
July 14	[4]4,944	4,945	[4]216,355	15,349	85,401	5,197	34,804	9,337	41,489
July 21	4,944	4,927	218,108	15,430	85,930	5,090	35,458	9,071	42,480
July 28, 1945	4,930	4,996		16,106	86,008	4,598	36,071	9,586	42,283
July 29, 1944	4,608	4,629	[5]225,294	14,123	81,296	4,801	37,805	8,732	56,667
Change:									
In week	—14	+69	+1,753	+676	+78	—492	+613	+515	—197
In year	+322	+367	—7,186	+1,983	+4,712	—203	—1,734	+854	—14,384
In year	+7.0%	+7.9%	—3.2%	+14.0%	+5.8%	—4.2%	—4.6%	+9.8%	—25.4%

[1] All time peak. [2] Lowest between January, 1922 and July 1, 1944. [3] Lowest since October, 1922, due to shutdown of six Mid-Continent states. [4] Lowest since December, 1921. [5] Stocks, July 22, 1944.

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Contract Let for 48 Miles Of 24-Inch Louisiana Line

Associated Contractors and Engineers, Houston, has been awarded a subcontract by O. C. Whitaker Company to lay approximately 48 miles of 24-inch line from south of Ruston, Louisiana, to Sterlington, Louisiana.

This construction is part of the 143-mile, 24-inch gas line to be constructed by the United Gas Pipe Line Company from the Carthage field, Panola County, Texas, to Monroe, Louisiana.

FPC Approves Purchase of Gas Facilities in Midwest

FPC has authorized Kansas-Colorado Utilities, Inc., Lamar, Colorado, to acquire and operate the natural gas facilities of The Central Gas Utilities Company of Abilene, Kansas, in Baca and Prowers counties, Colorado, and Stevens, Stanton, Hamilton and Grant counties, Kansas, for $1,000,000 cash.

The facilities to be taken over include a pipe line system from Stevens County, Kansas, to Lamar, Colorado, with a branch from Johnson, Kansas, to Springfield, Colorado; one wholly-owned gas well and an undivided ½ interest in four other gas wells, natural gas and oil leaseholds and gathering facilities in the Hugoton field, and distribution systems in 16 communities.

Kansas-Colorado will finance the acquisition by the sale of $600,000 of four percent first mortgage bonds due in 1965; 1850 shares of 5 percent preferred stock, and 50,000 shares of common stock, realizing a total of $1,025,750.

Right-of-Way Being Secured For Gulf Coast Gas Line

Right-of-way is being purchased and contract will be awarded this week for the construction of a natural gas line by Glenn H. McCarthy, Houston independent, from the operator's gasoline plant now under construction near Winnie, Chambers County, Texas, to the Du Pont plant near Orange, Texas.

The line will consist of 20 miles of 10¾-inch pipe from the Winnie plant to a point south of Beaumont, and 23 miles of 12¾-inch pipe from there to the Du Pont plant. Construction will get under way immediately.

Big Inch Shipments to Be Maintained at Present Rate

Despite the availability of tankers to supply the East Coast, PAW plans to run the Big Inch pipe line at its present rate of 320,000 barrels daily throughout the summer and fall.

The Big Inch, however, has been operating at above that figure for some months, and there may be some reduction in the excess movement. The greatest effect of the tanker situation will be on the railroads, which are expected to be permitted to cut their haulings into District 1 to possibly as low as 300,000 barrels daily.

The reduced rail movement into the East Coast area will ease the strain on the railroads in that section and release tank cars for the movement to the Pacific Coast, which is considerably more difficult to handle because of lack of double-line facilities.

All efforts are being directed now at building up stocks for military use on the Pacific Coast, and PAW on July 31 banned deliveries of asphalt from the West Coast states to other sections of the country. This was done by amendment of PAO 23, which previously prohibited deliveries of residual fuel oil from California, Oregon, Washington, Nevada and Arizona to other points in the continental United States.

Tyler Firm Starts Work On Sand Flat Field Outlet

Wood Engineering and Construction Company, Tyler, Texas, pipe line contractor, has started work on Humble Pipe Line Company's outlet for the Sand Flat field, Smith County, East Texas.

The line will be six miles of 6-inch line and will extend from the field northeast to connect with Humble's Hawkins-Longview 10-inch carrier. Heretofore, the field has been dependent upon tank trucks for an outlet.

Pipe Line Firm Formed

Associated Contractors and Engineers of Houston is the new organization formed by Laurence H. Favrot, G. A. Peterkin, J. W. Sharman, Earl Allen, and A. L. Forbes, Jr. The new firm will engage in the construction of oil, gas, gasoline, and water pipe lines; also allied work in the oil and gas industry, including plant construction.

Line Replaced

The Texas Pipe Line Company is replacing five miles of eight-inch line near the Houma, Louisiana, pump station on the company's South Louisiana system from the Paradis field to Port Arthur, Texas.

Associated Contractors and Engineers has the contract.

Gulf Line Reconditioned

Gulf Refining Company is reconditioning approximately 20 miles of eight-inch line on its main system from Sour Lake to Port Arthur, Texas. Associated Contractors and Engineers has the contract.

Humble Line Completed

Humble Pipe Line Company has recently completed and placed into operation a four-mile, 4-inch extension from its Fuhrman-Mascho field system, Andrews County sector of West Texas, to serve the new Basal Clear Fork area.

Interstate Natural Gas Lets Contract for Two Lines

Interstate Natural Gas Company has awarded contract to Associated Contractors and Engineers, Houston firm, for the construction of two natural gas lines in Louisiana.

ACE will lay approximately 14 miles of 4, 6, and 12-inch line near Sterlington, North Louisiana, and approximately 103 miles of 8, 12, and 16-inch line in South Louisiana.

Houston Firm to Lay 16 Miles Of Texas Line for Humble

Associated Contractors and Engineers has been awarded a contract by Humble Oil & Refining Company to lay approximately 16 miles of five and seven-inch line from the Dickinson field, Galveston County, Texas, to Hall's Bayou in Brazoria County, Texas. Work on this line is under way.

Michigan Gas Fields Sold For More Than $2,500,000

Consumers Power Company has purchased the Winterfield and Cranberry Lake gas fields of Michigan from Taggart Brothers Company for more than $2,500,000. There are 96 producing wells in the two Clare County fields, from which about 10 billion cubic feet of gas has been produced.

Consumers, one of the largest transporters and marketers of natural gas in Michigan, heretofore has not engaged in gas production.

Synthetic Oil Plant May Be Constructed in Oklahoma

Oklahoma may be the site for a $10,000,000 synthetic oil plant to be established by the United States Bureau of Mines with Tulsa, Sapulpa, Muskogee, Holdenville, Poteau, Henryetta and McAlester receiving consideration. The plant is expected to produce 10,000 gallons a day of synthetic motor fuel derived from coal. The product has been made successfully in the laboratory and has been found highly suitable for automobile and airplane engines.

Kaiser-Frazer Corporation To Make Low-Priced Autos

Henry J. Kaiser and Joseph W. Frazer have formed a corporation to manufacture a new light, low-priced automobile.

The corporation will be owned jointly by the Kaiser interests and Graham-Paige Motors Corporation.

The Kaiser-Frazer Corporation will produce on the Pacific Coast a light, automobile to be known as the "Kaiser." A larger automobile in the medium-price bracket will be built by Graham-Paige in Detroit. This car is to be known as the "Frazer."

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herent in 6-cylinder or one-piece manifolds and improving horsepower and performance. Welded steel construction is less susceptible to breakage and withstands more shock than cast iron. Ends of each manifold provided with 4" pipe tap elbow.

FAN BRACKET:

Of rigid box construction, is mounted on the top of the timing gear housing and also attached to two lifting lug bosses on the front of the cylinder block. This eliminates any possibility of the fan striking the radiator core such as frequently occurs with the conventional fan bracket construction.

FLYWHEEL HOUSING:

Heavily ribbed internally and supported by the usual number of capscrews. In addition it is:

- Bolted at the top to the cylinder block lifting lug boss;
- Bolted to extensions on side of crankcase to eliminate side pull;
- Bolted to the box base;
- Prevented from sagging by a pad on bottom of base.

The above arrangement is far superior to the customary method of internally bolting the housing above the split line of the cranckase only, with no top, side or bottom supports to maintain alignment.

INSPECTION PLATES:

Hand hole and valve cover plates are interchangeable and are held in place by only three capscrews each. They are equipped with two finger grips each for lifting and removal so that gaskets are not damaged by prying off plates.

OIL PUMP:

Designed and manufactured by Superior. Mounted on the front of the box base directly under, and driven from, the crankshaft gear. It is flange-mounted on the outside and connected to flanged oil suction and discharge lines. Disconnection of the two oil line flanges and removal of flange mounting screws is all that is required to remove the pump assembly. Hooded suction screen is located in base of pump.

OIL PUMP SUCTION SCREEN:

Located in center of the box base directly over the magnetic drain plug. It is equipped with a cast iron hood which covers and supports the screen and suction pipe. This eliminates any possibility of the pump sucking air and forcing it through the entire lubrication system.

ROCKER ARMS:

Made of cast steel without the conventional offsets due to cylinder head stud spacing. Lubrication is through drilled passages in the cylinder block and heads. Overflow oil from rocker arms is drained down the push rods and onto the valve lifters and cam lobes, supplementing pressure and splash lubrication from below.

STARTING ENGINE:

Controls for both starting and main engine are centrally located so that both may be started and operated by one man in one spot.

General Sales Offices: Toledo, Ohio: Division Offices: Denver; Ft. Worth; Pittsburgh; Tulsa; Torrance.
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☆ Kansas

Ellis Strike Is Probable; Hammeke Wildcat to Test

Another strike probable for Ellis County; pipe set to test show in Hammeke wildcat; 2 Barber County tests fail; Atlantic continues testing gas shows in Finney County wildcat; well south of Chitwood logs stains, odor in Viola.

Ellis County: Darby & Bothwell, Inc. appears to have a pool opener at Cromb 1, NE NW NE 22-11s-20w, wildcat west of the Solomon pool. Good porosity was logged in Arbuckle lime from 3682-85 feet, while 5 horizons in the Lansing from 3374-3554 feet reported good oil and gas shows.

Barton County: Lion Oil Company set pipe and was preparing to test Hammeke 1, SW SW NW 13-19s-12w, wildcat about 2½ miles east of the Hammer pool. Oil shows were logged in the Arbuckle lime, topped at 3376 feet, with saturation reported to 3382 feet, total depth. On top of the Arbuckle the wildcat is running about 25 feet higher than the same formation in the nearest dry holes.

Barber County: Two failures were logged for the county. Drillers Gas Company abandoned Gant 1, NE SW SE 6-31s-13w, east of the Marjorie pool, at 3678 feet after failing to produce from the Maquoketa lime; Lion plugged Lemon 1-C, SE NE NE 20-30s-13w, 3 miles north of the Lake City pool. Tests were made in Maquoketa and Arbuckle lime zones and the well abandoned at 4640 feet. Two miles east of the Skinner Northwest pool, J. M. Huber Corporation's Roark 1, NE SW NE 9-31s-14w, tested 4 barrels of oil an hour natural, through tubing from Maquoketa lime at 4363-65 feet.

Finney County: The Atlantic Refining Company continues tests at Wright 1, SE NW NW 33-21s-34w, wildcat 2 miles west of the Nunn pool. Recovering 3 million cubic feet of gas daily in a test of the Krider sand at 2600-18 feet, operator set packer at 2590 feet, perforated and acidized the Herrington zone to recover 2 million cubic feet of gas daily. Packer will be drilled out for regular production test of both zones.

Pratt County: South of the Chitwood pool, Mid-Continent Oil Corporation reported stains and odor in Viola lime at Eubanks 1, NW NW SW 34-28s-12w. Viola was topped at 4383 feet and a core from 4386-96 feet recovered 9 feet of sand with shale streaks and oil stains, odor and good porosity. Viola is running somewhat lower than same formation in wells at Chitwood and operator is drilling slowly below 4404 feet.

☆ New Mexico

Penrose Discovery Heads for Granite Before Completing

Ellenburger discovery in Penrose field proceeding to granite before completing in 252 feet of broken pay; deep prospect near Hobbs test water in Basal Permian after plugging back from granite.

Lea County: Neville Penrose, Inc., et al's Federal-Penrose 1, Ellenburger discovery for the Penrose field, was making slow progress in drilling to 8286 feet in granite-wash, topped at 8202 feet. The overlying 252-foot section of Ellenburger will make a prolific producer.

The Texas Company's Lockhart 2, C NW NW 18-22s-38a, ½ mile east of the south portion of the Paddock field, logged favorable saturation in coring the Glorietta (Holt) lime to 5230 feet, where a drill-stem test was pending. Humble Oil & Refining Company's Penrose 1 indicated a small pumper from perforations at 6330-6420 feet, and will complete in the Glorietta at 5250-5300 feet. Penrose et al's Hinton 3, northwest offset, flowed 2½ barrels oil hourly with 1 million cubic feet gas after acidizing perforations at 6810-50 feet. This zone was squeezed with cement, and perforations at 6425-55 feet flowed 2 barrels oil hourly after acidizing. Plans are to complete in the 5200-foot horizon.

Stanolind Oil & Gas Company's Jones 1, 3 miles southeast of the Hobbs field, tested sulphur water in plugging back from granite at 10,578 feet to 7898 feet, with casing at 7689 feet. More promising shows were logged at the 7100 and 5700-foot levels.

Texas' Eaves 1 was drilling gray lime at 9517 feet to explore the Ellenburger.

☆ West Texas

Short-Term Leases to Force Drilling Near New Pay

Short-term leases will force immediate development of Southwestern Andrews County new Devonian area; nearby 4-pay discovery has logged 422 feet of broken oil pay in Ellenburger, but salt content increasing; eastern Crane County's 3 wildcats pass up showings in the Devonian.

Andrews County: Magnolia Petroleum Company and Humble Oil & Refining Company's Cowden 1, ⅝ mile northeast of an 8012-foot failure, was running oil string to bottom at 8051 feet to complete in Devonian, topped at 7778 feet. Drill-stem tests at intervals forecast flowing production, but final test at 7932-69 feet returned only 630 feet of oil and gas-cut mud with unnatural odor in the bottom 90 feet of fluid. Base of Devonian chert was called at 7980 feet. Five tests are likely to be started shortly within the discovery block due to approaching lease expirations.

Shell Oil Company and The Texas Company's Ratliff-Bedford 1, indicated 4-pay strike was drilling dolomite at 11,440 feet, or 422 feet in the Ellenburger broken pay. The 30th drill-stem test taken at 11,374-11,419 feet returned gas to surface in 13 minutes and yielded 6000 feet, or 44 barrels of oil, with bottom 100 feet cut with mud. While no water has appeared in the recovery, the salt content of the fluid increased from 2000 parts per million at 11,369 feet to 8000 parts per million on the last test. This advances possibility of formation water being reached before entering granite. Bottom-hole pressure has dropped sharply the last 100 feet. The owners and nearby lessees must spend millions within the area during the next 5 years in development.

Humble's Means 88-X, Ellenburger project for the Means field, made an unsuccessful drill-stem test at 12,208-12,352 feet, possibly in Ellenburger.

Pecos County: The Atlantic Refining Company's Iowa Realty 1, C W¼ of W¼ H&GN Ry. 27, Block 10, first prospective Devonian strike for the county, continued fishing for drill pipe that became stuck while coming out of hole for drill-stem test at 6009 feet. This wildcat entered the Devonian near the 5950-foot level with elevation of 2550 feet, and showed oil in rotary returns. Phillips Petroleum Company's Powell-Powe 1, 2⅔ miles west by north of the Fort Stockton field, was drilling lime and shale at 12,080 feet on Ellenburger objective. It is near the east edge of the Delaware Basin.

Gaines County: Amerada Petroleum Corporation's Jones 1-A, which temporarily passed up an indicated oil discovery in the 9100-foot Permian, was drilling dry lime at 11,390 feet in Devonian, topped at 11,181 feet.

Crane County: The Atlantic Refining Company's University 1-A-31, Devonian discovery for the Block 31 prospect, was drilling Montoya lime at 9310 feet on Ellenburger objective. The company is placing contracts as fast as heavy-duty rigs become available for the drilling of its 9 authorized Devonian tests on nearby and outlying 160-acre leases that require production by November 14, 1946. Eighteen tracts are likely to be drilled before the deadline. Top of the Devonian in the discovery has been officially called at 7710 feet, with elevation of 2551 feet, while first production was confirmed by an initial drill-stem test at 7913-8024 feet. The upper section was somewhat shaley. Drill-stem tests at intervals to the Devonian-Silurian contact at 8895 feet yielded prolific flows of sweet crude, with in excess of 500 feet of effective pay.

John I. Moore et al's Waddell-Southland Royalty 1, 4½ miles southeast of the McKee pool, nearest production, was drilling lime, chert and dolomite at 6143 feet after recovering 840 feet of heavily gas-cut mud with a trace of oil from Devonian at 5905-79 feet. Base of Permian and top of Devonian detrital was called at 5888 feet with elevation of 2423 feet. Humble's Cowden 1, 1½ miles northwest of the Crane-Cowden field, was drilling chert at 6630 feet in Devonian, topped at 6035 feet, having passed up temporarily a prospective producer at 6079-6170 feet. These 3 Eastern Crane County wildcats have created a big demand for leases on the strength of their Devonian showings.

Midland County: Humble's Buchanan 1, 9 miles southeast of Midland, cemented 5½-inch casing at 12,568 feet, or 6 feet off bottom, after failing to complete drill-stem tests in Ellenburger, topped at 12,170 feet. It is to be deepened to water. High-pressure gas-distillate production was indicated near the 10,300-foot level.

Winkler County: Stanolind Oil and Gas Company-Shell's Waddell Bros. 1, ¾ mile northwest of the Wheeler field, entered the Ellenburger at 10,740 feet, or 174 feet low, and resumed coring at 10,773 feet after 3 drill-stem tests returned a small volume of oil and gas-cut mud without water. It is below the water level in the field proper, indicating an irregular water table.

☆ Texas Panhandle

Wildcat in Dallam County Is Failure in Permian

Dallam County has wildcat failure in Permian, and second prospect is drilling barren Ellenburger; Wheeler County deep project has shallow show.

Dallam County: The Texas Company's Capitol Freehold Trust 1, C SE SE Capitol Syndicate 10, Block 7, 9 miles south of Texline, was drilling hard lime and dolomite at 5989 feet in Ellenburger. A drill-stem test at 5809-95 feet proved dry. Shamrock Oil & Gas Corporation's Hester 1, 4 miles southeast of Conley, was abandoned in water at 3468 feet.

Wheeler County: Sinclair Prairie Oil Company's Henderson 1, C NW NW H&GN Ry. 16, Block A-8, Ellenburger project, was drilling at 2260 feet, having logged an oil and gas show at 1640-1700 feet.

Sherman County: Phillips Petroleum Company's H. E. Smith-Shirk 1, NW NW SE T&NO Ry. 174, Block 1-T, nearest deep test to Pennsylvanian gas production in the Oklahoma Panhandle, was drilling lime at 6935 feet without shows.

☆ West Central Texas

Shackelford County Test Has Oil Show in Bend

Shackelford County wildcat has oil show in Bend; Taylor County's first Ellenburger strike increases oil yield.

Shackelford County: Eltex, Ltd.'s Davis 1-B, NW NW SE T&P Ry. 16, Block 12, was bailing a small amount of free oil from lime pay at 4951-54 feet, with open hole below 4033 feet. Another string of pipe will be run to try for completion in this zone. This wildcat entered the Bend at 4592 feet with elevation of 1916 feet. The company's Davis 1, NE NE SE T&P Ry. 30, Block 12, is to be plugged back from water in Ellenburger at 5109-5218 feet to test a thin zone in the Mississippi.

Taylor County: Great Lakes Carbon Corporation's Jones 3, Wm. Bishop survey, is rated above 50 barrels of oil daily with litle water after using 2000 gallons of acid in Ellenburger at 4760-77 feet, having plugged back from 4781 feet. This initial Ellenburger strike for the county has stimulated geophysical activity, and considerable outlying acreage has been leased.

Comanche County: Central Texas Gas Company's Pettit 1, L. Pamplin survey and 1 mile west of Energy, was abandoned at 3462 feet after testing broken saturation in Ellenburger, topped at 3166 feet.

☆ North Texas

Jack County Has Discovery In Bend Conglomerate

Southeastern Jack County has discovery in Bend conglomerate; Cooke County geophysical prospect flows oil through testing tool; shallow pool opened in Western Archer County.

Jack County: Roeser-Pendleton, Inc., and F. Kirk Johnson's McAnally 1, southeast corner of Henderson C. S. Lands 18, Block 2, and ½ mile east by north of Joplin, was awaiting production test with 7-inch casing at 4430 feet after confirming production from oil-saturated conglomerate at 4427-45 feet in Bend, topped at 4400 feet with elevation of 1060 feet. A drill-stem test at 4407-46 feet returned gas to the surface in 7 minutes, recovering 240 feet of free oil and 420 feet of heavily oil-cut mud. McAnally 1 is 1¾ miles east of a small discovery on the same producing contour, while it is 2¼ miles west of nearest oil well in the Risch, but 101 feet high on the Bend when correlated with the latter. A large producing area may be in prospect.

Cooke County: Fred Snuggs, McElreath, Suggett & Neal Bros.' Almon-Sun 1, northeast corner of the northwest 49 acres of the J. M. Randolph Survey, 2½ miles northeast of Gainesville, has landed pipe to complete in Strawn sand at 2904-12 feet. A drill-stem test at 2905-12 feet yielded 700 feet of fluid and 650 feet of heavily oil-cut mud, with heads of 35-gravity oil occurring during drill-pipe breakdown. Top of the Variegated shale was called at 2370 feet. Sun Oil Company gave the acerage for the test to forestall a top-lease, while Magnolia Petroleum Company and Shell Oil Company are the largest lease owners.

Archer County: P. C. Burns et al's Parsons 1, E. L. & R. R. 1, A-688, 5 miles north by east of Megargel, opened a shallow pool in pumping 10 barrels

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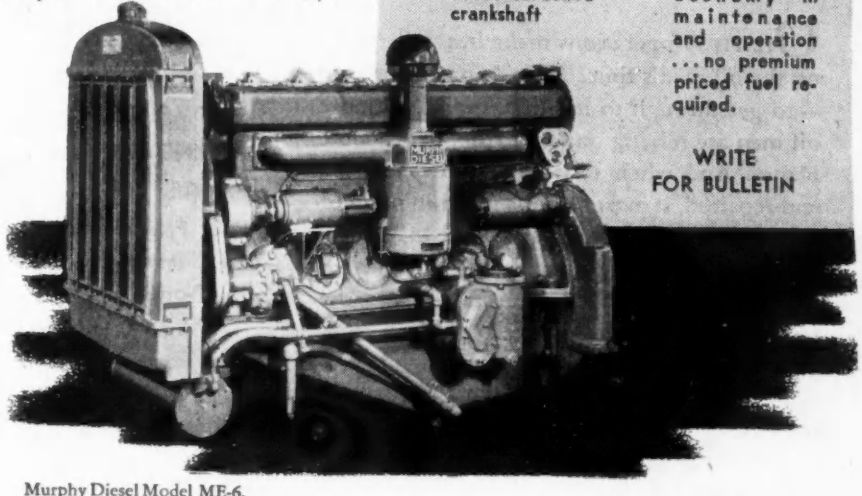

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initial from Cisco sand at 1488-95 feet.

Throckmorton County: Panhandle Refining Company's Keeter 1, east offset to the North Ewalt area, flowed at a rate of 45 barrels hourly through ⅛-inch choke from perforations at 4240-50 feet in Bend, topped at 4240 feet, or 31 feet high.

☆ East Texas

Cherokee Wildcat May Be Gasser in Travis Peak

Eastern Cherokee County wildcat indicates gasser in Travis Peak; Navarro County deep prospect tests water in Rodessa; more productive areas indicated for Harrison County.

Cherokee County: Humble Oil & Refining Company's Maness 1, Jose Musquez survey and 3 miles south of Circle, is rated a prospective gas discovery from Travis Peak, entered at 8872 feet and drilled to 9289 feet. Initial test at 9160-9205 feet yielded salt water, but gas broke through rotary mud to build up surface pressure after perforating at 3 levels between 8930 and 9070 feet. Tubing will be run to make production test.

Tom G. Shaw et al's Bolton-Pure 1, which showed for a Woodbine oil strike in mid-July from sand at 4171-77 feet, was running pipe to complete after being delayed by flood waters.

Freestone County: The Texas Company's Ham 1, R. Lawson survey and 3 miles east by south of Teague, resumed coring at 7450 feet after a drill-stem test of the Rodessa at 7420-29 feet yielded 60 feet of gas-cut mud with shutin bottom-hole pressure calculated at 3100 pounds. This wildcat logged Massive anhydrite at 7290-7418 feet.

Navarro County: J. L. Collins & Company's Greenlee 1, Travis Peak prospect and 3 miles east of Eureka, resumed coring at 6375 feet after a drill-stem test at 6343 feet yielded salt water. The Massive anhydrite was called at 6175-6300 feet with elevation of 349 feet.

Wildcats: Placid Oil Company et al's Ramsey 1, 2 miles southeast of Mount Pleasant, Franklin County, is considered a failure. In Hopkins County, Magnolia Petroleum Company's Beville 1, 3 miles northeast of Yantis, was drilling limey-shale at 6875 feet on Travis Peak contract. The Bowie County Smackover test by Northern Ordnance, Inc.'s Lumpkin 1 was drilling shaley-sand at 5680 feet.

Harrison County: Roger Lacy's 2 wildcats had shows indicating more productive areas for the county. Lacy's E. L. Poteet 1, Betty Humphries survey, now drilling below 6906 feet, logged showings of gas-distillate in the Rodessa horizon and a core from 6800-12 feet recovered 6 feet of lime with taste and odor of gas and distillate. A drill-stem test of this section recovered 4 feet of distillate cut with mud and 2 gallons of water-white distillate in 9 minutes through ¼-inch choke. An unconfirmed report states a good show of gas and possibly oil was logged around 6430 feet.

Lacy's J. R. Tuttle 1, J. M. Clifton survey, waiting on cement at 7027 feet, total depth, which had a small flow of oil was from perforations in the Pettit at 6480-88 feet, afterward flowing gas and salt water, plugged back to 6500 feet and is preparing to test the Rodessa horizon.

Lacy's B. C. Quinn 1, wildcat in Vashti Gibbs survey, is drilling in sand and shale below 4600 feet.

Shelby County: M. E. Davis' Pickering Lumber Company 1, W. J. Brittain survey, is coring at 6591 feet. A core from 6571-82 feet carried traces of gas and oil; a core from 6582-98 feet had oil and gas odor but no shows.

Humble Oil & Refining Company's Pickering Lumber Company 1, St. Francois survey, 9½ miles east and 1 mile south of Shelbyville, is drilling below 9661 feet in hard sand and shale in the Cotton Valley, topped at 9405 feet. No shows of oil have been reported.

Panola County: Skelly Oil Company's Lewis Werner Sawmill 1, Hampton Anderson survey, is waiting on potential. Upper Pettit was perforated from 5760-76 feet and treated with 5000 gallons of acid; Lower Pettit was perforated with 32 shots from 6052-60 feet and treated with 5000 gallons of acid.

San Augustine County: M. E. Davis' C. Thomas 1, wildcat in W. B. Horn survey, is drilling below 8322 feet. Porosity carrying salt water was logged from 7390-95 feet, second porosity from 7442-69 feet, Hill porosity carrying gas shows from 7638-55 feet, and James lime at 7855 feet.

Marion County: Jefferson Oil & Gas Company's J. N. Deware 1, wildcat in R. Bennington survey, is drilling in hard sand below 7085 feet.

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☆ South Central Texas

Dimmit Gas Field Opened; Deep Wildcat Is Abandoned

New gas field opened in Dimmit County; Gulf abandons deep Atascosa County wildcat; Continental spuds Bastrop County test.

Dimmit County: A new gas field has been opened 4½ miles southwest of Carrizo Springs with completion of Calatexia Oil Company's S. E. McKnight 1, Sect. 35, Block 13. Drilled to 2995 feet, operator set 5½-inch casing at 2764 feet and completed the well at 2665 feet as a dry gas producer.

Humble Oil & Refining Company's S. E. McKnight 1, wildcat 3½ miles southwest of Carrizo Springs, is drilling below 3394 feet in shale. A drill-stem test at 2720-32 feet recovered 75 feet of salt water.

Kerr County: Phillips Petroleum Company's Whitworth 1, Ellenburger lime test southwest of Kerrville, was drilling below 6300 feet in sandy shale.

Bastrop County: Continental Oil Company's Willie Malina 1, 9000-foot wildcat test 4½ miles north of Cistern, has spudded and was setting surface casing.

Gonzales County: Quintana Petroleum Corporation was preparing to spud Anna Spahn 1, wildcat test 4 miles northwest of the Gonzales townsite. It is projected to 14,000 feet.

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☆ Southwest Texas

Completion Test Under Way In Starr County Wildcat

Completion attempt under way at Starr County wildcat; Humble abandons Jim Hogg County deep wildcat; slight show logged in McMullen County test.

Starr County: Testing is under way at W. W. Zimmerman's F. W. Seabury 1, wildcat 12 miles north of Rio Grande City in Porcion 79. Sand was logged at 3921-35 feet and on a drill-stem test at 3929-35 feet the recovery was 160 feet of oil and 60 feet of oil-cut mud with a working pressure of 300 pounds on a ¼-inch choke in 5 minutes. Casing has been set on bottom and perforations made for a completion attempt.

Tarver, Staggs and Doyno of Rio Grande City have staked a 1400-foot wildcat northeast of the Rio Grande City townsite. It is the Chatfield & Doyno 1 in Porcion 80.

Jim Hogg County: Humble Oil & Refining Company's Mestina Oil and Gas Company 1-D, deep wildcat 12 miles southeast of Hebbronville, has been abandoned at 10,460 feet.

McMullen County: Quintana Petroleum Corporation's South Texas Syndicate 8-F, wildcat 5 miles south of Fowlerton, was drilling near 5500 feet in sandy shale. A wet sand was logged at 5098-5125 feet.

In the Loma Alta Wilcox sand pool, The Atlantic Refining Company's J. W. Atkinson 2 has set casing for completion after recovering 2580 feet of 36.7-gravity oil and 60 feet of oily mud on a 30-minute drill-stem test at 6902-05 feet. Total depth is 6905 feet with 5½-inch casing set at 6903 feet.

Fred W. Shield's W. D. Glasscock 1, wildcat 7 miles west of Clegg, is drilling below surface casing set at 1346 feet.

☆ Lower Texas Coast

Condensate Pool Opened In Willacy County

Condensate pool opened in Willacy County; Karnes County activity boosted; 2 wildcat locations staked in Jackson County.

Willacy County: A new condensate pool has been established in the La Sal Vieja area, near Raymondville, with completion of Magnolia Petroleum Company and J. S. Abercrombie Company's H. H. Dohe 1. On initial gauge from perforations at 10,000-040 feet in the Frio formation, the well flowed 140 barrels of 52.5-gravity condensate daily through a 19/64-inch choke. Tubing pressure was 1800 pounds with the gas-condensate ratio being 31,000/1.

About a mile north of this discovery, the joint operators' Geis 1 was drilling below 8700 feet in sandy shale. Reports say the Geis 1 is running normal with the Dohe 1.

Karnes County: In the Coy City field, Seaboard Oil Company of Delaware's Sallye Treadwell 2 flowed 100 barrels of oil daily through a ¼-inch choke from 7818-38 feet and an estimated 5½ million cubic feet of gas daily, open flow.

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Schaefer 1, wildcat 6 miles west of Green, was drilling near 6300 feet in sandy shale after recovering salt water with little pressure on a drill-stem test at 6088-96 feet.

Magnolia's Ruth Ingram 1, Burnell-Wilcox field, was deepened from 6782 feet to 6882 feet and on a 20-minute drill-stem test recovered 2550 feet of pipe line oil. The test now is being deepened to 7000 feet.

Lavaca County: McMurrey Refining Company has completed a producer in the Vienna field. The Ed Kolar 1-A flowed 121 barrels of 32.8-gravity oil daily from 8475-83 feet. Tubing pressure was 250 pounds and casing pressure 520 pounds.

Jackson County: Wright Drilling Company of Houston has spotted locations for 2 wildcat tests. The Fred Westhoff 1 is in the Menefee survey 5 miles southeast of Edna. The C. M. Hasdorff is in the Rector survey.

☆ Upper Texas Coast

Gas-Condensate Well Near Hankamer Is Completed

Wildcat gas-condensate well completed near Hankamer; Madison County test sets surface casing; New Ulm wildcat prepares to test; Columbus outpost makes squeeze job; deep Montgomery County test is failure.

Liberty County: A new gas field has been opened 3 miles northeast of Hankamer with completion of Glenn H. McCarthy's A. G. Blanke 1-A, Levi Barrow Survey. Drilled to 8550 feet, 5½-inch casing was set on bottom. Operator perforated casing at 8497-8501 feet and on initial gauge the well flowed 4,450,000 cubic feet of gas daily through a 14/64-inch choke with a tubing pressure of 4000 pounds. The gas-condensate ratio was 80,000/1 with the condensate being 44-gravity.

Madison County: West Production Company and Noranda Oil Company's H. M. Bering 1, Amy Boatwright Survey, wildcat 7½ miles southwest of Madisonville, has set 10¾-inch surface casing at 2232 feet and is installing blow-out preventer before drilling. Several slight shows have been reported in the Queen City and Wilcox. Top of the Wilcox sand about 1580 feet with shows of oil being logged at 1597-1602 feet and 1608-13 feet. This wildcat is projected to the Woodbine sand at about 10,500 feet. However, it may drill to the Georgetown.

Austin County: Sinclair Prairie Oil Company's W. A. Schweke 1, wildcat 2 miles southeast of New Ulm, James Tylee Survey, bottoms at 10,013 feet and casing was set at 10,011 feet. Operator has made perforations at 9940-42 feet and 9899-9900 feet and squeezed. This wildcat recovered 500 feet of 36-gravity oil on a drill-stem test at 9155-68 feet in the Wilcox.

Colorado County: Cities Service Oil Company's Schobal 1, north extension test in the Columbus field, perforated casing at 8814-18 feet and recovered salt water and gas. Operator now is squeezing and will retest.

Matagorda County: Amerada Petroleum Corporation and Sun Oil Company's Morrison 1, wildcat 3 miles east of Blessing, is conditioning the hole after the well blew out at 10,273 feet.

Hardin County: Pan American Production Compay's Olive Sternenberg 1, wildcat in the P. S. Watts Survey, was still fishing for stuck drill pipe at 10,039 feet where the well attempted to blow out.

Harris County: A 6500-foot wildcat has been staked 2 miles east of Pasadena by the Traders Oil Company of Houston. The test is the Deepwater Land Company 1 in the James Seymour Survey.

Montgomery County: Humble Oil & Refining Company's E. L. Bender 1, wildcat in the Rayford area, 3 miles northeast of Spring, has been abandoned at 10,996 feet after failing to find production in the Cockfield and Wilcox.

☆ South Louisiana

Humble Opens New Field Near Bayou Sale Pool

Humble has discovery in St. Mary Parish; Thornwell field outpost testing; another sand uncovered in Venice pool; Vermilion Parish wildcat being abandoned; new activity due in East Hackberry area.

St. Mary Parish: A new oil field, 6 miles northwest of the Bayou Sale pool, has been discovered by Humble Oil & Refining Company. The company's Miami Corporation 1-H flowed at the rate of 264 barrels of 34.8-gravity oil

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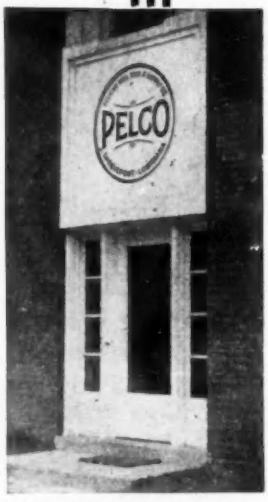

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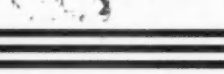

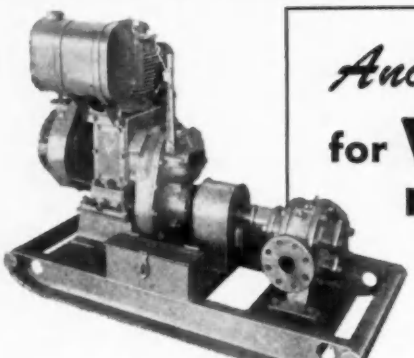

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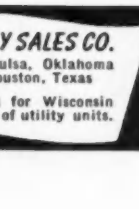

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daily through a 9/64-inch choke on a 1-hour gauge. Tubing pressure was 1450 pounds with casing sealed. Gas-oil ratio was 347/1. Total depth was 11,919 feet with casing set at 11,848 feet. Operator perforated at 11,600-611 feet with sand being logged at 11,600-622 feet. Production is from the Miocene and is deeper than production in the Bayou Sale field.

Jeff Davis Parish: Cities Service Oil Company's D. J. Benoit 2, 36-11s-5w, outpost in the Thornwell area, is testing through perforations at 9621-25 feet. Total depth is 9720 feet with 5½-inch casing set at 9717 feet.

Plaquemines Parish: Tide Water Associated Oil Company has added another new sand in the multiple-sand Venice field. The company's Manhattan Land and Fruit Company 19, in 26-21s-30e, flowed 173 barrels of 31.9-gravity oil daily through a ⅛-inch choke from perforations at 7962-80 feet. Gas-oil ratio was 430/1.

Vermilion Parish: The Ohio Oil Company's LeLande, 8-11s-3e, wildcat test in the Leroy area, north of the Abbeville field, is being abandoned at 11,968 feet. Operator set 5½-inch casing at 11,957 feet but a series of tests below 11,000 feet failed.

Cameron Parish: New activity is indicated in the East Hackberry field following the recompletion of Magnolia & Abercrombie's Breaux 2. The well was deepened from the gas sand at 7235 feet and completed in perforations at 7538-48 feet for 265 barrels of oil daily through a 12/64-inch choke. The operators now are preparing to deepen O'Bryan 1 to the 7500-foot oil sand.

Acadia Parish: Sun Oil Company and Sohio Oil Company's A.R.M. Company 1, 39-9s-1w, outpost in the Egan field, is still delayed with a fishing job at 10,528 feet.

Beauregard Parish: Magnolia Petroleum Company's Lutcher-Moore D-1, 34-5s-12w, wildcat test, is drilling near 10,950 feet in sand and shale.

Houston Oil Company of Texas, new operator in the Mystic field, has spudded Houston of Texas Fee 1 and set surface string at 1419 feet.

St. Martin Parish: One of the deepest active tests in South Louisiana is Gulf Refining Company's McGrief Brothers Cooperage Company 1, deep test in the Bayou Bouillon field. It is drilling shale below 12,800 feet.

State Oil Control Upheld

A measure ot uphold state control over oil production has been proposed by the U. S. Chamber of Commerce.

☆ North Louisiana

Prospective Wildcat Pool Openers Are Drilling Tight

Prospective wildcat pool openers drilling tight; Richland Parish gets new wildcat location.

Claiborne Parish: Hunt Oil Company's W. T. Owens 1, 15-23n-7w, prospective opener of the East Haynesville area, is perforating and squeezing before testing pay zones in the Gloyd and Kilpatrick horizons. Total depth is 5520 feet, with

7-inch casing cemented at 5173 feet. Forty perforations were made between 4454-64 feet in the Gloyd which tested 2 percent oil and 98 percent salt water. Perforations between 4426-34 feet were squeezed, as were those between 4464-72 and 4490-4500 feet.

H. C. Owens' Thomas Crichton 1, 1-20n-8w, Cotton Valley test in the Homer area, is drilling below 5075 feet in the Travis Peak but has had no commercial showings.

Lincoln Parish: The California Company is withholding information on M. H. Nobles et al 1, wildcat in 12-19n-4w, Hico area, and is drilling below 8675 feet. Reports of oil and gas shows in the Travis Peak have been unconfirmed, but there is an increase of leasing in the area.

The company's second test in the Tremont field, W. W. Norris 1, 13-18n-1w, is reported drilling below 9520 feet. It is also reported only 9 feet lower than the producer and to have obtained shows of satuation sufficient to guarantee a producer.

Ouachita Parish: California's other tight wildcat, Walter Maxey 1, deep test in 32-18n-1e, is reported drilling below 6730 feet. A thin sand comparable to that producing from the Rodessa in the Sugar Creek field was reported to have been logged.

DeSoto Parish: Tom Palmer's Walter Hill 1, C NW SE 3-10n-13w, deep test in the shallow Benson field, ran electrical log at total depth of 6550 feet and is correlating. Pettit lime was topped at 6040 feet, and carried no oil or gas shows.

Grady H. Vaughn, Jr., is drilling below 8994 feet in McGrew 1, C SW SW 34-16n-14w, with no showings so far.

Madison Parish: C. H. Murphy, Jr.-Sun Oil Company's Joe Mahony 1, 10-17n-11e, is drilling below 3392 feet. The well is reported to be running structurally high, and to have logged oil sand.

Sohio Petroleum Company's W. L. Etheridge 1, 3-14n-12e, is a new Paluxy wildcat test for the parish.

Richland Parish: R. J. Caraway Company has staked another wildcat, Bryant 1, C SE NW 35-17n-8e, equi-distant between Delhi and the recently opened Big Bayou fields. It will seek 3500-foot Tuscaloosa production. Roy L. Fisher has staked W. M. Spruel 1, C SW SW 4-16n-8e, Tuscaloosa sand test, ¾ mile south of Big Bayou field's discovery, Southport Petroleum Company's Lola S. Howard 1, C NW NW NW 4-16n-8e. Charles Murphy and Sun are completing derrick for G. S. Parker 1, C NE NW 4-16n-8e, in the offset 40-acre tract to Lola Howard 1.

Caldwell Parish: Shell Oil Company is drilling below 6131 feet in sandy lime and shale in Louisiana Central Oil & Gas Company 2, second test in the new Vixen field.

Jackson Parish: Shell's Tremont Lumber Company 2, 23-15n-1w, second test in the Chatham field, is drilling below 5230 feet. This test and Shell's well in Caldwell Parish are reported structurally low to the gas-distillate discoveries, which may indicate possible oil production.

Bossier Parish: Barnsdall Oil Company and Sohio Petroleum Company's Padgett-Bundy 1, C NW SE 17-20n-12w, Cotton Valley test in the Benton field, is drilling below 6575 feet. Travis Peak was topped at 5655 feet, correlating about flat with the Hanks 1, discovery 1½ miles to the northwest.

☆ Arkansas

Columbia County's Village Field Is Extended North

Village field extended north; 2 tests abandoned; 4 locations made in proven areas.

Columbia County: Ashland Oil and Refining Company's Bond 1, C S½ S½ 10-17s-19w, has extended production north in the Village field. The well is still testing, but earlier had cleaned into pits flowing a steady stream of oil from open hole. The well logged porosity 20 feet higher in the Smackover, at 7365 feet, than any of the 20 producers in the area. Three dry holes have been drilled in the field proper. Total depth is 7410 feet, with 5½-inch casing cemented at 7406 feet.

Grady H. Vaughn abandoned G. C. Buck 4, C SE SW NW 12-15s-20w, in the Stephens field, at 3063 feet in the James lime, topped at 3004 feet.

Union County: Lion Oil Refining Company's Dumas 1, C NE SW SW 9-17s-16w, deep wildcat in the Lisbon area, was also abandoned at 6730 feet. The well logged Cotton Valley at 4625 feet, sand showing oil stain at 4720-40 feet, Buckner at 6598 feet, Smackover at 6700 feet, porosity showing salt water at 6718 feet. Casing was perforated from 4724-26 feet. A drill-stem test recovered

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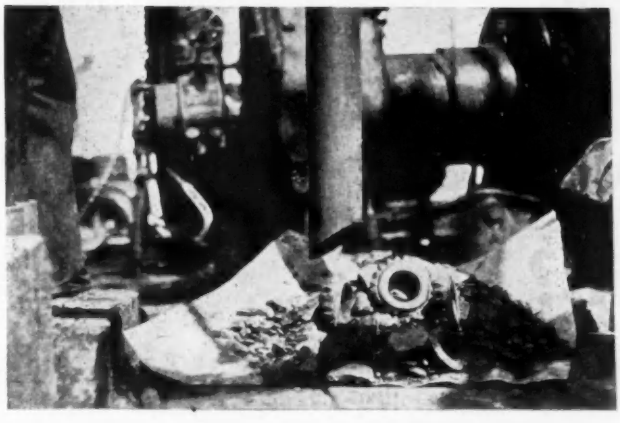

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salt water with a slight showing of oil.

H. E. Wasson's Union Saw Mill A-1, C SW SW NE 8-18s-12w, wildcat which logged sand showing oil from 2320-24 feet, is drilling below 2341 feet.

R. C. Wallingsford's Union Saw Mill 1, C SE NW NW 13-18s-13w, wildcat, is waiting on cement at 2312 feet.

Oklahoma Allowable Fixed

Oklahoma Corporation Commission fixed the state's daily oil production allocation for August and September at 416,000 barrels, an increase of 6000 barrels over the July quota. Of this amount, 388,000 barrels were allocated to crude oil and 28,000 to condensate and distillate.

☆ Mississippi

Encouraging Shows Noted For Cranfield Extension

Encouraging shows noted for Cranfield extention; new pay in Tinsley area has successful test; Marion County prospect abandoned; Eucuta field has 3 new producers.

Franklin County: Gulf Refining Company's Ella Lees 1, NWc 32-7n-1e, which is trying to extend production in the Cranfield field from Adams County, tested 5 barrels of 37.7-gravity oil with varying amount of salt water in a drill-stem test of the Massive sand at 10,396 feet. An earlier test at 10,424-34 feet with ¼-inch choke produced considerable salt water and oil flowing at the rate of 15 barrels an hour. The well continues to test in an effort to squeeze out salt water.

Adams County: California's A. M. Ratcliffe 4, 71-7n-1w, Cranfield field, has been completed as a gas-condensate well with an initial flow of 60 barrels per day. Casing was perforated at 10,210-40 and 10,250-98 feet to develop production. California's National Gasoline Company 1, 52-7n-1w, Cranfield area, was abandoned at 5929 feet after extensive coring produced no shows.

Lawrence County: Humble Oil & Refining Company's V. L. Parkman 1, SWc 8-6n-20w, is drilling below 4702 feet after a whip-stocking job at 4065 feet. Previously the hole had been run to 7588 feet in salt with no shows encountered.

Sharkey County: The British-American Oil Producing Company's F. B. Houston Estate 3, SEc 15-11n-7w, in the old Cary field, is drilling below 8430 feet after running electrical log to 6233 feet. Cores taken at 3273-74 feet revealed saturated gas rock but drill-stem test in same section produced only mud.

Madison County: Union Producing Company's E. P. Cameron 1, C NE SE 8-9n-2e, Tuscaloosa prospect, is drilling below 6848 feet in shale. Cores from 6186-6206 feet recovered 19 feet of sand and shale while cores taken at the 6500-foot level produced sand saturated with salt water.

Yazoo County: Sohio Petroleum Company's Brumfield B-1, NW SW 1-10n-3w, which is being deepened to explore new levels in the Tinsley field, recovered 3482 feet of 35-gravity oil in a 10-minute test of the Brumfield sand which lies at 5774-5796 feet, and which represents a new productive zone for the field.

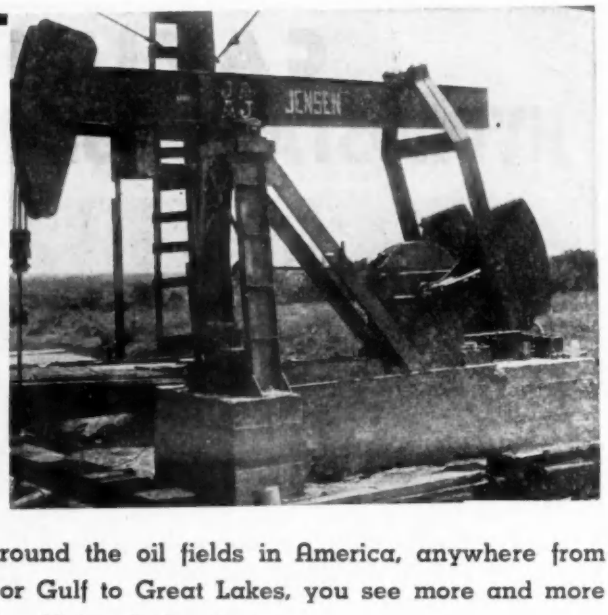
Union's Jennie Stevens 21, NWc 12-10n-3w, Tinsley area, is running 7-inch casing after reaching 11,625 feet. Cores taken at 11,385-404 feet and 11,430-50 feet recovered lime with shows of gas. Cores at 11,506-46 feet recovered only black shaly lime.

Marion County: California's W. E. Walker 1, 10-2n-18w, in the Hub field, which was brought in early in the spring, has been abandoned at 9325 feet in the Massive sand after encountering no shows. Humble's A. E. Ball 1, 20-2n-14e, Hub area, is drilling below 8382 feet in the Tuscaloosa zone after cores at this level were unproductive. Cores taken at 8050-61 feet showed sand of good porosity with indications of gas.

Wayne County: Gulf's G. S. Stanley 25, NEc SE 3-9n-9w, Eucutta field, has been successfully completed with an initial production of 113 barrels of oil per day. The well was perforated at 5293-99 feet in the Eutaw and swabbed in. Gravity of oil is 27.7. Gulf's G. S. Stanley 26, SWc SE SE 6-9n-8w, Eucutta, is installing pump after swabbing an estimated 100 barrels of oil per day from perforations at 5121-36 feet.

Sun Oil Company has successfully completed Mrs. Adie Finley 3, SWc 7-9n-8w, Eucutta, with an initial production of 160 barrels of 21.5-gravity oil per day. Third completion for the week in this prolific field is Tide Water Associated Oil Company's J. S. Wheeless 1, NEc NE SE 12-9n-9w, which pumped 353 barrels of 21-gravity oil in 24 hours

What is this trend to JENSEN Units?



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with production from 2 sets of perforations in the Eutaw section at 5128-47 feet and 5208-30 feet. Lyons & Prentiss is preparing to install pump on T. F. Reynolds 4, NEc SW NW 18-9n-8w, after a successful swab job at 5258-63 feet. Humble's G.M.&O. Railroad Company 2, SE NE 3-9n-9w, Eucutta area, is also installing pump after developing good production.

Warren County: Union's C. J. Harlen 1, C SW SE SE 1-14n-3e, deep test, has been abandoned at 11,726 feet with no shows indicated. National Associated Petroleum Company's Jeff Davis Heirs 1-A, 23-14n-1e, is drilling below 4920 feet in the Wilcox zone with no shows.

☆ Alabama

Choctaw County Wildcat May Open New Producing Area

Alabama may get second producing area; 7 wells still on inactive list.

Choctaw County: The Carter Oil Company's Sam Allman 1, NE SW 5-10n-3w, 1 mile south and 3 miles east of the Gilbertown field, has shows rating it as opening Alabama's prospective second producing area. The well is still drilling, after running electrical log to 3446 feet. About 74 feet of possible pay in the Eutaw section was logged, with top being picked at 3337 feet, and oil sands indicated at 3338-47, 3354-71, 3373-3401, 3422-28 feet. A drill-stem test of 1 hour and 55 minutes was made of sand from 3316-47 feet, using 5/8-inch bottom hole choke and 1/4-inch top choke. Recovery was 210 feet of oil-cut mud, 180 feet of oily mud, 300 feet of salt water, oil and mud, and 360 feet of salt water showing oil and gas. A leaking packer prevented ascertaining from which level salt water was coming.

In the Gilbertown field, Hunt Oil Company's Boney Scruggs 3, C SE NW 32-11n-4w, is installing pump after reaching total depth of 3568 feet. Hunt is also testing Robert Land 5, C SE NE 31-11n-4w, after drilling to 3651 feet and cementing 5½-inch casing at 2864 feet.

Wilcox County: Southern Natural Gas Company's G. W. Morgan Estate 1, SE SE SW 32-12n-5e, is drilling below 3510 feet without shows. Eutaw was topped at 1855 feet, but a drill-stem test in that horizon recovered only salt water.

Walker County: Glenn D. Rose's Ulysses 1, C N½ NW SE 6-13s-6w, is drilling below 2860 feet in shale. Bangor was topped at 1070 feet, Devonian at 2118 feet, Clinton at 2280 feet, Trenton at 2480 feet.

Florida

Humble Oil & Refining Company's Lownes-Treadwell 1-A, C SW NE 17-42s-23e, Charlotte County, is fishing for electric log cable at 5560 feet. A flow of salt water from hole was killed.

Collier County: Humble's Gulf Coast Realties 7, C SW NE 17-48s-30e, Sunniland field, is running casing at total depth of 5800 feet.

Highlands County: Humble's G. C. Carleton Estate 1, S SW NE 34-38s-29e, is drilling below 10,221 feet in hard lime.

Monroe County: O. D. Robinson's State 1, NEc NW 29-59s-40e, is fishing at 6085 feet.

☆ Rocky Mountain Area

Wyoming Wildcat Encounters Gas In Frontier Formation

Wyoming wildcat encounters gas; wildcats begun in Utah and Montana.

Wyoming

Shannon Oil Corporation's State 1, NW NE of 16-33n-91w, wildcat test on East Muskrat, Fremont County, has cemented 7-inch casing 5 feet off bottom at 4580 feet. The well is reported to have encountered considerable gas in the Frontier. A drill-stem test of the first Wall Creek at 3037-3048 feet showed gas at the rate of 1 million cubic feet per day. A drill-stem test at 4218-4287 feet recovered sulphur water.

Utah

Mountain Fuel Supply Company is digging cellar in NE SE 12-15s-11e for its 6000-foot test of the Farnham gas field, Carbon County, which produces CO_2 gas from around 3200 feet.

Montana

The Texas Company has released a location in NW SE SW of 15-33n-4e, for Leonard 1, Devonian test of its Utopia structure, Liberty County. It is approximately ½ mile east of the oil discovery well, and about a mile west of the gas

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Prepared under the Direction of the Committee on Tectonics, Division of Geology and Geography, National Research Council.
Chester R. Longwell, Chairman, Philip B. King, Vice-Chairman.
Charles H. Behre, Walter H. Bucher, Eugene Callaghan, D. F. Hewett, G. Marshall Kay, Eleanora B. Knopf, A. I. Levorsen, T. S. Lovering, George R. Mansfield, Watson H. Monroe, J. T. Pardee, Ralph D. Reed, George W. Stose, W. T. Thom, Jr., A. C. Waters, Eldred D. Wilson, A. O. Woodford.

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The scale is 1:2,500,000, or 1 inch equals 40 miles. Printed in 7 colors on 2 sheets, each about 40 x 50 inches. Full map size is about 80 x 50 inches.

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discovery. Production is from the Ellis at around 2300 feet.

Big Horn County: Marcus Snyder et al are moving in rig for their Madison deep test at the western end of the Hardin gas field. The well, Buzzetteri-Cortins 1, is in C Lot 3, 24-1s-32e.

Petroleum County: Schrock et al have spudded in Fifer 1, NW NW NW of 21-15n-30e, wildcat test east of the Cat Creek field, Garfield and Petroleum counties. The well will test the Ellis.

Labor Directory Offered

The War Manpower Commission has announced the publication of a new Directory of Labor Market Areas, which becomes available for the first time through the Superintendent of Public Documents, Washington 25, D. C., for 25 cents a copy.

☆ Illinois Basin

Edwards County, Illinois, Test Extends Albion Pool

Edwards County, Illinois, test extends Albion pool; Gallatin County project yields 180 barrels of oil in 24 hours; East Bible Grove pool extended; Carter has discovery near Bungay pool.

Illinois

Fred Noah and others' Kershaw 1, NE NW NW 14-3s-10e, Edwards County, has given the Albion pool a ½-mile extension southwest with Biehl sand production. During a drill-stem test at 1975-2000 feet, the well made a good show of gas and 550 feet of oil in 2 hours. Operators are waiting on cement with pipe set at 1988-2000 feet, the latter figure total depth.

Gallatin County: Frank King and others' Jones 1, NE C 22-7s-9e, 1½ miles south of the Herald pool, pumped and flowed 180 barrels of oil and no water in 24 hours from Aux Vases sand at 2899-2912 feet. Testing continues.

White County: Homer Luttrell's Questell 1, NE NE NW 36-6s-9e, 1½ miles east of the Herald pool, swabbed 140 barrels of oil in 24 hours from Tar Springs sand at 2296-2304 feet. The well is testing.

Clay County: Kingwood Oil Company is extending East Bible Grove pool 1½ miles east with Cypress sand production. Operator has set casing for test at 2526-37 and 2568-77 feet at Fulk 1, SW SE SW 13-5n-7e, and is waiting on cement.

Hamilton County: The Carter Oil Company has a discovery at Provident Mutual Life Insurance Company 1, NW NW SE 14-4s-7e, 1¾ miles northeast of the Bungay pool. During a 4-hour drill-stem test, the well made gas in 11 minutes and 2735 feet of oil from Aux Vases sand at 3275-3327 feet. The test showed no water.

Kentucky

J. Resnick and others' Woodall 1, 7-K-20, Crittenden County, a rank wildcat test far removed from production, has set pipe to test Bethel sand saturation at 1376-91 feet. A 1-hour drill-stem test showed 190 feet of oil and considerable gas.

☆ Michigan

Arenac County Extension Receives Test in Dundee

Arenac County extension gets test; Missaukee County wildcat logs good gas show; Coldwater field has 2 more completions.

Arenac County: Lowell Bernhardt's Logas 1, SW NW NW 25-19n-4e, 3-mile southeast extension to the Deep River field, is under test for Dundee production after 1000-gallon acid treatment. The well had a light show in a 6-foot section of dolomite from 2760-66 feet.

Alpena County: Sohio Petroleum Company is drilling on Turtle Lake Club 1, SE NW NE 9-29n-5e, wildcat, after testing 20,000 cubic feet of gas in Traverse lime at 783-89 feet.

Missaukee County: Wright and Scotts' Wilder 1, W½ NW SE 34-22n-7w, wildcat, logged a good show of gas in Stray sand, 1395-98 feet, strong enough to cause a semi-blowout.

Isabella County: Completion of 2 more Dundee oil wells in the Coldwater field pushed the total to 44 since discovery a year ago this month without a failure.

Lion Firm Changes Name

Lion Oil Refining Company has changed its name to Lion Oil Company. The name of the company's subsidiary, Lion Chemical Corporation, remains unchanged. Headquarters of the organization is El Dorado, Arkansas.

☆ California

Kern County's Santiago Area May Get Discovery

Oil discovery indicated in Santiago area of Kern County; small field of 21-gravity oil brought in from 850 feet at Antelope Hills; new 1200-barrel well gives impetus to fractured Schist exploration in Edison field; drilling program under way to tap new Cymric deep sand.

Kern County: The southern San Joaquin Valley continues to chalk up new oil discoveries, though some of minor importance. A small new field has been brought in by Williams Brothers Company, whose Layman 1 in 12-28s-19e, Antelope Hills area, pumped 150 barrels of 21-gravity clean oil from Lower Miocene sands at 810-853 feet. A recent gauge showed a decline to 50 barrels and the well appears to be sanding up.

Western Gulf Oil Company's wildcat, Woodward-U.S.L. 2 in 21-11n-23w, Santiago area, off the southeast end of the Midway-Sunset field, appears to be a new discovery. The well logged Miocene sand from 2460-2670 feet and on formation test the drill pipe filled with clean 24-gravity oil. Operator has run casing. Western Gulf's first well in the area, Woodward 1, about a mile away, was completed at a comparatively shallow depth in Tulare formation and is currently producing about 5 barrels a day from perforations at 543-623 feet.

Harry Magee and Independent Exploration Company are credited with the discovery of a new pool from frac-

tured Basement Schist in Dougherty 3, 14-30s-29e, Edison field. The well originally was drilled to explore the Upper and Lower Duff zones, but was unproductive. When Magee and Independent Exploration last month brought in Brockman 3, about a mile away, from Basement Schist, Dougherty 3 was deepened to tap the same pool. Pressures indicate, however, that a new pool has been discovered. The well is flowing 1200 barrels a day of 19-gravity oil through a 12/64-inch choke. Operators have now rigged up Dougherty 5, an old hole, also in Sect. 14, to test the basement.

Pursuant to recent Congressional authorization, Standard Oil Company of California, operator for the Navy in the Elk Hills Naval Reserve, will shortly have half a dozen strings of tools engaged in a shallow zone exploratory program. Two wells in the new program are already making hole. Stevens zone exploration is expected to start in a few weeks.

Standard of California is regaining circulation in its Lost Hills deep test, Cahn 58-4. The well is circulating at 10,186 feet with 110-pound mud and with no loss. Total depth is 11,080. Oil or no oil, this well when completed will stand as an achievement in modern drilling technique, due to the operator's success in overcoming high head salt water.

Union Oil Company's deep zone discovery in the Cymric area near McKittrick has induced Standard of California to start 2 wells in search of the new sand, Fitzgerald 55 in 24-29s-21e, and 34-26 in 26-29s-21e. Union Oil is drilling a second well, Anderson 55-26, in Sect. 26. Union's discovery well is currently flowing 475 barrels of 33-gravity oil, .1 percent cut, through a 26/64-inch bean from 3610 feet.

Los Angeles County: Completion by Shell Oil Company of Bryant 3-1 in the Seal Beach field has extended the field ½ mile north. In the first 24 hours the well flowed 260 barrels of 31.5-gravity oil cutting 3 percent through a 24/64-inch bean with 140-pound flow pressure and 335,000 cubic feet of gas. Depth is 10,194 feet. Current flow is 256 barrels of oil and 145,000 feet of gas.

Signal Oil and Gas Company's Newhall test, Signal-Needham 1 in 13-3n-16w, is pumping to the sump on a test reported to be mostly water with some oil. The well was drilled to 4998 feet but has been plugged back to test showings around 2600 feet, which when drilled several weeks ago, appeared to be of sufficient importance to induce the operator to erect tanks.

Imperial County: The Texas Company may soon discontinue drilling its Holtville wildcat, Grupe-Engebretson 1, 8-16s-16e. The well has reached 12,308 feet in shale. Operator will doubtless make a routine test of reported showings up-hole before deciding to drill deeper or abandon.

☆ Canada

470,000 Acres In Alberta Taken Up by Foothills Firm

A 470,000-acre block of oil and gas rights on the Central Plains has been taken up by Foothills Oil & Gas Company, Ltd. Foothills, a subsidiary of Imperial Oil, Ltd., has hitherto confined its operations to the Turner Valley field. The Central Plains block, largest taken up in Alberta this year, includes about 340,000 acres of Crown Reservation and 130,000 acres of Canadian Pacific Railway rights, centering on the town of Provost. The block extends from Twp. 36 Rges. 1 and 2w4 north and northwest to Twp. 41 Rges. 3 to 5w4. Its east boundary is along the Alberta-Saskatchewan border. Its northwest corner is 20 miles south of Wainwright oilfield, and 2 miles southeast of Vale Dome.

Irwin Millner and Associates of New York, who recently secured 15,336 acres of leases covering the bulk of Vale Dome, have commenced the first venture in a 3-well program on this Central Alberta Plains structure. Initial well, Martin 1, is in the southeast 10 acres of lsd 2 17-42-6w4. On the crest of a pronounced Devonian knob outlined by a Heiland seismic survey in 1943, the Martin 1 will drill into the Devonian, with probable completion depth around 2600 feet.

Phillips Petroleum Company, Bartlesville, Oklahoma, has resumed geological work on the Sullivan Creek Anticline, South Alberta Foothills, where the company completed an unsuccessful wildcat a few months ago. It is expected that new drilling will follow the geological investigation. Work is under the direction of Warren Thompson, professor of geology, University of Nebraska.

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EXPLORATORY COMPLETIONS

CALIFORNIA WILDCATS

Los Angeles County — Failures: British-American-Texas Co.'s N.L.&F. 2, 21-4n-17w, Newhall area, test 7793-7867 ft, wtr, abnd 8467 ft.

Rothschild Oil Co.'s Cates 1, 7-2s-11w, Pico area, abnd 4195 ft.

Texas Co.'s S. Covina Comm. 5-1, 18-1s-9w, Covina area, abnd 2000 ft.

Kern County—Discovery: Williams Bros. Oil Co.'s Layman 1, 12-28s-19e, Antelope Hills area, elev 985 ft, pump 50 bbls 21-gr, clean, appears to be sanding up, td 853 ft.

Kern County—Failures: Amerada's S. P. 58-23, 23-29s-29e, Ant Hill area, Olcese 3318 ft, Pyramid Hills 4187 ft, Schist 5317 ft, abnd 5382 ft.

Pike Drilling Co.'s Jewett 1, 19-28s-29e, West Round Mt. area, grit 2131 ft, Vedder 2143 ft, abnd 2158 ft. gray sd.

Santa Barbara County—Failures: Union Oil Co.'s Campbell Ranch 1, 24-4n-29w, Elwood area, abnd 5076 ft.

Whittier Associates' Glenn Buell 1, 15-7n-32w, Los Alamos area, abnd 1787 ft.

Kings County—Failure: Pacific O&G Dev. Corp.'s Hogan 1, 20-24s-18e, Pyramid Hills area, abnd 1012 ft gray sd.

ILLINOIS WILDCATS

Edgar County—Failure: A. M. Myers' Tate 1, nw ne se 11-12n-14w, abnd 512 ft.

Edwards County—Oil Discovery: Phillips' Tait 1, sw se sw 5-3s-10e, McCl 3249-53 ft, flow 24 bbls, td 3268 ft.

Fayette County — Failure: Dale Hopkins' William & Otto Bandelew 1, nw sw ne 25-7n-3e, abnd 2054 ft.

Franklin County—Failure: H. R. Randell's Cypher et al 1, nw ne sw 13-5s-2e, abnd 2779 ft.

Hamilton County — Failure: Texas Co.'s Davis 1, sw nw ne 9-7s-5e, abnd 3478 ft.

Jefferson County—Failure: J. A. Lavender et al's Casner O&G Co. 1, nw nw nw 33-1s-1e, abnd 2412 ft.

Washington County — Failure: Magnolia's Resener 1, ne se se 36-2s-4w, abnd 1579 ft.

Wayne County—Oil Discovery: Robinson & Puckett's Mold 1-B, sw se ne 32-1n-8e, Av 3017-27 ft, flow 18 bbls, td 3204 ft.

INDIANA WILDCATS

Gibson County—Failure: Kingwood's Johnson 1, sec 9-3s-12w, abnd 2800 ft.

Posey County—Oil Discovery: Carter's Cox 1, nw nw se 14-7s-14w, Tar Springs 2073-76 ft, flow 105 bbls, td 2092 ft.

Warrick County — Failure: J. E. Carlson's Roller 1, ne nw se 34-5s-7w, abnd 1562 ft.

KANSAS WILDCATS

Barber County—Failures: Lion's Lemmon 1-C, se ne ne 20-30s-13w, Lans 3873 ft, Miss 4375 ft, Simp 4572 ft, td 4643 ft.

Drillers' Gas Co.'s Gant 1, se nw se 5-31s-13w, Lans 3916 ft, Miss 4424 ft, Simp 4651 ft, Arb 4743 ft, abnd 4745 ft.

Hodgeman County—Failure: Derby Bothwell's Faulkner 1-A, sw sw 11-22s-26w, Miss 4475 ft, Simp 5063 ft, Arb 5084 ft, abnd 5126 ft.

Rooks County — Oil Discovery: Darby & Bothwell's Vohs 1, nec 14-10s-19w, Arb 3549-63 ft, 380 bbls oil day, td 3562 ft.

Sheridan County — Failure: Sterling Drlg. Co.'s Fulton 1, nwc 14-6s-27w, Lans 3686 ft, Miss 4420 ft, abnd 4431 ft.

Stratford County—Failure: Phillips' Effie 1, ne ne nw 36-24s-13w, Lans 3560 ft, Viola 3957 ft, Simp 4086 ft, Arb 4142 ft, Granite 4754, abnd 4757 ft.

Trego County—Failure: A. R. Jones et al's Wahlborg 1, sec 23-15s-22w, Lans 3837 ft, Miss 4376 ft, Simp 4680 ft, Arb 4690 ft, abnd 4715 ft.

KENTUCKY WILDCATS

Breckenridge County—Failure: J. W. Tuttle's Pollard 1, 25-N-35, abnd 301 ft.

Caldwell County—Failure: Kentucky Natural's Sisk 1, 9-J-21, abnd 1161 ft.

Daviess County — Failure: W. H. Greer's Norris 1, 12-O-32, abnd 680 ft.

Harden County—Failure: Stoll Refg.'s Roark 1, 14-M-47, abnd 1280 ft.

McLean County—Failure: Miller & Shiarella's Pinkston 1, 19-N-27, abnd 2306 ft.

Ohio County — Failure: Cherry & Kidd's Tapp 1, 17-N-23, abnd 2790 ft.

NORTH LOUISIANA WILDCATS

Richland Parish—Big Bayou Field Discovery: Southport Pet. Co.'s Lola S. Howard 1, c nw nw nw 4-16n-8e, Wilcox 1540, Midway 2368, Clayton 2896, Tuscaloosa 2965-80, oil sand 3122-33, salt wtr, 3266-76, perf 60 shots 2965-80 ft, flow 260 bbls 40.1-gr, ¼-in tbg choke, cp 775 lbs, tp 375 lbs, gor 385/1, td 3433 ft.

Richland Parish — Failure: Humphrey & Wynn's Valentine 1, c s½ sw ne 12-15n-6e, L. Cret 3228, massive anhy 4290-4474, base anhy 4602, abnd 5020 ft.

SOUTH LOUISIANA WILDCAT

Calcasieu Parish—Failure: W. T. Burton's W. T. Burton-Fee 1, 4738.4 s of nl 470 w of el 15-11s-10w, abnd 10401 ft.

SOUTH LOUISIANA NEW PAY TEST

Plaquemines Parish—Venice Discovery: Tide Water's Manhattan Ld. & Fruit Co. 19, 2340 s 440 w of nec 26-21s-30e, perf 80 shots 7962-80 ft, flow 173 bbls 31.9-gr, ⅛-in, gor 430/1, tp 1100 lbs, td 9852 ft.

MICHIGAN WILDCAT

Allegan County—Failure: Oil Producers' Kunard 1, sw sw ne 20-4n-12w, abnd 1595 ft.

MISSISSIPPI WILDCATS

Scott County—Failure: Pan-American's U. S. A. 1, nwc 26-5n-6e, Eutaw 5750 ft, Tuscaloose 6220 ft, Massive sd 7238 ft, abnd 7252 ft.

Warren County—Failure: Union's C. J. Harlen 1, c sw ne 24-16n-7w, abnd 11,726 ft.

NEW MEXICO WILDCAT

Eddy County—Failure: R. L. Harrison et al's Crockett-Spencer 1, nw ne ne 19-18s-26e, elev 3421 ft, abnd 1602 ft.

NEW MEXICO NEW PAY

San Juan County—Kutz Canyon Deep Failure: Transcal Realty & Dev. Corp.'s Davidson-Federal 1, c nw nw 28-28n-10w, elev 6168 ft, Lewis shale 2330 ft, Lookout 4343 ft, abnd 5700 ft.

OKLAHOMA WILDCATS

Garfield County—Failure: Sinclair Prairie's Webber 1, nw nw nw 28-20n-4w, abnd 6395 ft.

Okfuskee County—Failure: Deep Rock Oil's Reynolds 1, ne ne sw 12-11n-10e, abnd 2684 ft.

Oklahoma County—Failure: Frank Russell's Broecking 1, sw se sw 10-11n-4w, abnd 7400 ft.

WEST TEXAS WILDCATS

Andrews County—Failure: DeKalb Agricultural Assn.'s Lockhart-Brown 1-C, c nw sw PSL 12, blk A-41, 1¾ mi ne Martin 7000-ft pool, elev 3286 ft, Yates sd 2930 ft, Grayburg 4180 ft, Glorietta 5985 ft, abnd 7257 ft.

Kent County—Failure: Sohio's Mays 1, c ne ne H&GN Ry. 44, blk 4, elev 2184 ft, li 1298 ft, San Andres 1165 ft, San Angelo 2000 ft, Pennsylvanian 5550 ft, Strawn 5825 ft, abnd 7768 ft.

Lamb County—Failure: Hunt Oil Co.'s Foust 1, 682 nsl 660 wel nw¼ sect 43, blk 1, R. M. Thomson sur, elev 3484 ft, Glorietta 4490 ft, Tubb 5550 ft, abnd 6304 ft.

Pecos County—Failures: Byrd & Frost's Glesecke-Gulf 1, ne ne nw H&GN Ry. 54, blk 11, elev 2593 ft, salt 730 ft, Yates sd 870 ft, brown li 1324 ft, San Andres 1610 ft, granite wash 4590 ft, granite 4655 ft, abnd 4668 ft.

Humble's State Nat'l Bank (El Paso) 4, c nw nw T.&St.L. Ry. 3, blk 140, elev 2622 ft, Ellenburger 5220 ft, abnd 5492 ft.

Scurry County—Failure: Lion's McLaughlin 1, 1988 nsl 1831 wel H&TC Ry. 197, blk 97, elev 2367 ft, anhy 704 ft, salt 835-1550 ft, San Andres 1655 ft, San Angelo 2415 ft, Clear Fork 2545 ft, abnd 3724 ft.

Upton County—Failure: Humble's Gresham 1, c ne se sect 2, Indianola Ry. Co. sur, 1 mi w by n of 5-bbls disc pumper, elev 2707 ft, anhy 1230 ft, Yates 2260 ft, lime 3790 ft, jkd and abnd 9950 ft.

Winkler County—Failure: Richardson & Bass' Kansas City Stock 1, c ne ne PSL 25, blk B-2, elev 2943 ft, brown li 2475 ft, Yates 2545 ft, San Angelo 5040 ft, Tubb 5990 ft, Miss 7640 ft, Woodford 7700 ft, Dev 8310 ft, Montoya 9090 ft, Simpson 9500 ft, McKee 9980 ft, Waddell 10,310 ft; Ellenburger 10,570 ft, abnd in granite 10,673 ft.

WEST TEXAS OUTPOST

Gaines County—Russell Field Failure: Sinclair Prairie's Northrup-Lindsey 1, c se ne CCSD&RGNG Co. 461, blk G, 1½ mi se prod, elev 3578 ft, Yates sd 3130 ft, Glorietta 6360 ft, abnd 8150 ft.

WEST CENTRAL TEXAS WILDCATS

Parker County—Failure: Continental's Dobbs 1, 990 nsl 330 ewl Hugh Brown sur A-79, elev 1073 ft, lime 3507 ft, Bend 4380 ft, Mississippi 5505 ft, Ellenburger 6090 ft, abnd 6413 ft.

Stephens County — Oil Discovery: Sinclair Prairie's Tipton 1, 330 out nec sect 2960, TE&L Co. sur, elev 1263 ft, Bend 3337 ft, Marble Falls 3660 ft, base Barnett 4054 ft, Ellenburger 4055 ft, flow 25 bbls oil, 1½ bbls wtr 2 hrs, via 2-in, cp 1000-900, tp 350-160 lbs, 2000 gals acid Ellenburger open hole 4056-4164 ft.

Taylor County—Failure: West Central Drlg. Co.'s Teaff 1, 1800 nsl 5350 ewl Jose Gabo sur 128, elev 1811 ft, Saddle Creek 2292-2345 ft, abnd 2385 ft.

WEST CENTRAL TEXAS OUTPOST

Jones County—Alexander Extension—New Shallow Pay: R. H. Roark-L. F. Hooker's Myatt 2, 2260 snl 1780 wel Jas. H. Warfield sur 10, 4000 ft nw Alexander 1600-ft pool, elev 1550 ft, pump 40 bbls 36-gr fr Fry sd 1410-24 ft.

SOUTH CENTRAL TEXAS WILDCATS

Bexar County—Failure: Walter Vode-Pegg Bros.' Volney Peterson 1, 330 fr n&el 100-ac lse, H. Virm sur 195, bailed little oil, abnd 1238 ft.

Milam County—Failure: Curtis Kelley-Don McGregor's Ellison Bros. 1, 330 fr ne&swl of 321-ac lse, A. L. Taylor sur, abnd 1498 ft.

SOUTHWEST TEXAS WILDCATS

Duval County—Failure: Geo. Parker-Chas. McCune's H. Weid 1, 330 fr s&wl lot 1, Diego Hinojoso sur, 205.75-ac lse, elev 5000 ft abnd 5012 ft.

McMullen County—Failure: Dee Davenport's Annie Graves Dolph et al 3-A, 330 fr n&el se¼ se¼ sect 54 C C Shumway sbdn, 4200-ac lse, abnd 1590 ft.

LOWER TEXAS COAST WILDCATS

Brooks County—Failure: Sun's Mary M. Lasater 3, 583 fr nl 665 fr m/ely/wl HE&WT sur 349, 1339 sw of ne interior cor of 1760-ac lse, 990 w of well 1, abnd 6526 ft.

Jackson County—Failure: Rowan & Hope-Newman Bros.' Hollingsworth Rch 1, 467 fr ne&nwl blk 6, abnd 4762 ft.

LaSalle County — Failure: Quintana Pet. Corp.'s South Tex. Synd. 6-F, 700 fr sl 1000 fr el R. Jourdan sur 28, abnd 5892 ft.

Live Oak County — Oil Discovery: Continental's Albert West 2-A, 330 fr ne&sel sect 55 of Kittie blk, Geo. W. West sbdn, M. Cronican sur, 5474-ac lse, perf 24 shots 6720-22 ft, flow 103.26 bbls 34-gr oil, 4% wtr, 9/64-in, gor 5100/1, cp 2200 lbs, tp 1700 lbs, td 7387 ft.

UPPER TEXAS COAST WILDCATS

Brazoria County—Failures: General Crude's G. H. Bingham et al 1, 9000 fr el 830 fr nl Francis Bingham sur 13, 830 s of sl of Ft. Bend Co. line, 615-ac lse Juliff area, abnd 9005 ft.

Salt Dome Oil Corp.-Butcher-Arthur's Elmer & Norman's Doonan 1, 330 fr ne&sel tr 17 and 100-ac lse, T. Spraggens sur, Manvel area, 3300 se of Gulf's Colby Est. 3, abnd 7202 ft.

Wharton County — Failure: Donald W. Moore-T. J. Ahern's Hans Johnson 1, 330 fr n&wl sect 46, 160-ac lse, L. L. Miller sur, abnd 8002 ft.

EAST TEXAS BORDER COUNTIES WILDCAT

Harrison County—Gas-Distillate Discovery: D. E. & R. J. Whelan's Wm. Peal Est. 1, 2350 fr wl 990 fr sl Betty Humphries sur, 330 fr m/ely/wl 990 fr sl 126.5-ac tr, elev 303 ft, perf Rodessa 108 shots 6776-94 ft, flow 52 mln gas open, 10 bbls 58.9-gr dist per mln, tp 1790 lbs, cp 2590 lbs, gor 100,000/1, td 7862 ft.

NORTH TEXAS WILDCATS

Archer County—Oil Discovery: P. C. Burns et al's G. F. Parsons 1, 850 nsl 1350 ewl sect 1, E.L.&R.R. sur, A-688, 1 mi n by e prod, with intermediate failures, elev 1154 ft, pump 10 bbls, sand 1488-95 ft.

Archer County—Failure: Wayne King's Hale 1, 150 out nwc blk 95, Harris sbdn, abnd 1469 ft.

Cooke County—Failures: J. W. Baldwin's Bugg 1, 1320 ewl 1170 nsl Jno, DeMarcus sur A-314, elev 817 ft, abnd 2583 ft.

Benson Bros. et al's Zipperer 1, 200 nsl 2000 wel lot 14, Geo. Ivy sur A-516, abnd 1501 ft.

Jack County—Oil Discovery: Continental's S. F. Borden 1, 990 out nwc E. S. Wilson sur A-1729, 4¼ mi se Newport, 6 mi sw prod, elev 1123 ft, Palo Pinto 1750 ft, Bend 5648 ft, Simpson 6722 ft, Ellenburger 6870 ft, flow 171 bbls 42-gr, gor 1553/1 on 6-hr gauge, via 1-in, 3000 gals acid Simpson perf 6720-6860 ft, td 6927 ft, pb 6872 ft.

Wichita County—Failures: Akin-Dimock's Honaker-Texaco 1-A, 550 snl 200 ewl of 160-ac tr, Jas. Cole sur A-37, abnd 2079 ft.

D. D. Feldman's Fee 1, 400 out swc H&TC Ry. 15, blk 7, abnd 2030 ft.

Waggoner-Closuit-Frank Wood's Burnett 2-B, 1111 nsl 1402 ewl sw¼ H&GN Ry.-W. W. Carroll 16, A-436, abnd 2101 ft.

Young County—Failures: Paul B. Scott et al's Routan 1, 630 nsl 1050 ewl TE&L Co. sect 25, abnd 714 ft.

R. V. Tidwell et al's Baker 1, 4950 nsl 3270 wel Henry Hodges sur A-134, elev 1227 ft, abnd 3644 ft.

NORTH TEXAS NEW PAY TEST

Young County—Unnamed Field Deeper Discovery: Grace & Grace's (was Burk Royalty Co.'s) Stovall 2, 330 ewl 1320 snl TE&L Co.

The OIL WEEKLY'S TRADING POST

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■ FOR SALE: 1 Wilson Super Spudder, complete with lines, mast, steel dog house, Kohler light plant, 5″ and 6″ tools and hand tools. 1 Ft. Worth Jumbo D. Spudder, complete with lines, mast, dog house, Kohler light plant, 5″ to 12½″ tools and hand tools. 1 Bridgeport, all steel deep well cable tool drilling unit, with 210 H. P. Waukesha drilling engine. The above listed equipment is in A-1 condition. Write O'Brien & Brown Drilling Co., Box 124, Salem, Illinois, or Phone Odin, Illinois, 117R4.

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Indicator, all in good condition.
If interested in real bargain, write or phone Ed S. Holmans, Gladewater, Texas.

■ FOR SALE: One used Casperson-Handley shot-hole drill. Kelly type pull down, mounted on 1940 model ton and a half Ford truck. Address: Box 2, c/o The Oil Weekly, Houston, Texas.

■ Forty acres perpetual Royalty Greenwood County, Kansas, under 160 acres 55 wells 500-a, shallow field Kansas and Oklahoma. Good for repressuring, bargain prices. Box 104, Independence, Kansas.

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■ FOR SALE: Used "Welderz Frend" acetylene gas generators. I buy and recondition. W. B. Mackey, 6509 Hillsboro St., Houston, Texas, Phone W-7714.

■ FOR SALE: Steam Rotary Rig, 7500 feet 4½ inch Drill Pipe; 2—125-250 Oil Well Boilers;1—105-250 Oil Well Boiler; 1—8″ Union Tool Drawworks with New 36″ Parkersburg Hydromatic Brake; 1—27″ Ideal Rotary;1—7¼ x 18 Wilson Snyder Mud Hog Pump with side suction;1—7¼ x 14 Gardner-Denver Mud Hog Pump; 1—66″ Ideal RB Traveling Block with 8″ Hook;1—5 sheave Oil Well Crown Block with cat line sheave; 1—12″ x 12″ Ideal-Ajax Engine; 2—10 x 4½ x 10 Worthington Boiler Feed Pump, Complete unit. The above Rig is complete and ready to drill—recently completed 7500 foot contract in East Texas where Rig is located. Priced to sell. Joe Shulman, Box 1908, Longview, Texas.

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■ Married man, 18 years experience in contouring, engineering and geological drafting, desires connection with oil company in Texas or Oklahoma. Address: Box 80, c/o The Oil Weekly, Houston, Texas.

■ Position Wanted: Drilling and production superintendent with large independent operator desires change. Middle aged, good education, sober; competent and capable of holding important position with large or small company. A-1 references from past and present employers. Thoroughly familiar with deep drilling and production in both Gulf Coast and Mid-Continent areas; also specialize in workovers and handling of old production. Address: Box 1, c/o The Oil Weekly, Houston, Texas.

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■ Wanted by a consulting geophysical organization: Petroleum Engineers with Hayward Mud-logging experience or its equivalent. Immediate openings in Venezuela. Excellent opportunity for advancement to managerial positions throughout the world. Address: Box 45, c/o The Oil Weekly, Houston, Texas.

■ WANTED: Driller, experienced on Sullivan hydraulic core drill. Location, Rocky Mountains. Address: Box 35, c/o The Oil Weekly, Houston, Texas.

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HELP WANTED

■ Major oil company wishes to employ two geologists in Houston office for subsurface work in Texas-Louisiana Gulf Coast. Please state education, experience and salary expected in first letter. All inquiries confidential. Our employes know of this advertisement. Address: Box 64, c/o The Oil Weekly, Houston, Texas.

Wanted, by established oil well supply firm, an experienced oil well supply pricing clerk. Also experienced purchasing department clerk. Men preferred but will consider women if capable of taking dictation. State experience and salary now earning. Address Box 61, c/o The Oil Weekly, Houston, Texas.

Wanted, by major oil company, Geological-Map Draftsman for permanent position in Midland, Houston, Wichita Falls, Texas. Give qualifications, experience, references and draft classification. Address: Box 83, c/o The Oil Weekly, Houston, Texas.

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■ In the interest of both employers and employes, **The Oil Weekly,** through its Overseas Pony Edition, which is sent free to 6500 former oil men now in the services, has offered to run advertisements from those who will be seeking work once they are discharged. In some cases **The Oil Weekly** has a few more details but, generally speaking, direct correspondence would be advisable. Unless otherwise indicated it may be some time before the person named in the advertisement is available.

■ Postwar work as roustabout wanted by young man, 21, with experience in contract work in oil field construction, laying pipe line, tool dresser on pulling unit; previously employed by major oil firm and construction company. Kenneth Eugene Winkler, 901 Wilson Street, Falls City, Nebraska.

■ Want postwar employment in Holland, Belgium, France; have ability to speak the languages. Formerly with pipeline division of major company; qualified to supervise repair or laying of lines. Age 26, unmarried, 2½ years college work. 1st Lt. Robert E. Hedrick, Noble, Illinois.

■ Wanted postwar sales or accounting position in oil or supply industry, by college graduate, married, age 32. Eight years' experience with supply companies: head office accounting department, field stores, special sales representative for aircraft supplies. Robert M. Smith, MaM 2/c, 121st N. C. Battalion, c/o Fleet Post Office, San Francisco, Calif.

sect 495, offset 4300-ft Marble Falls disc, elev 1110 ft, Palo Pinto 1806 ft, Marble Falls sd 4375 ft, li 4390 ft, Barnett 4622 ft, Mississippi 4654 ft, pump 10 bbls oil, 50 bbls wtr, 4000 gals acid Mississippi open hole 4655-80 ft.

WILDCAT STARTS

CALIFORNIA

Fresno County: General Pet. Corp.'s Burrel 47-1, 1-17s-18e, lcn.

Kern County: Standard of California's 34-26, 26-29s-21e, lcn.

Norwalk Co.'s 1, 32-31s-23e, dr.

Los Angeles County: Union Oil Co.'s Simi 5, 22-3n-17w, lcn.

San Luis Obispo County: H. L. Norris' Cuyama Rancho 2, 25-11n-28w, lcn.

Ventura County: Cal Oil's 1, 14-4n-19w, lcn.

T. J. Haddock's Lovell 1, 14-5n-19w, lcn.

ILLINOIS

Clay County: Gulf's McVeigh 1, sw nw se 34-3n-6e, lcn.

Clinton County: Big Chief Drlg. Co.'s Giesslooke 1, se sw ne 9-2n-5w, lcn.

**Texas Co.'s Schaefer 1-C, sw nw sw 26-3n-2w, lcn.

Fayette County: Homer Luttrell et al's Caole-Grube Comm. 1, nw se sw 26-5n-3e, lcn.

Jasper County: Pure's Sacred Heart 1, sw ne sw 33-7n-10e, lcn.

Jefferson County: Cherry & Kidd's Carson 1, ne ne sw 31-3s-3e, lcn.

Marion County: Buell & Doran's Sloan 1, nw nw se 1-2n-1e, lcn.

Richland County: Wallace Wright's Heindselman 1, sw se nw 22-2n-14w, lcn.

Washington County: Magnolia's Labuda 1, ne nw ne 18-3s-1w, dr.

Wayne County: Mohawk Drlg. Co.'s McDaniel 1, se se nw 15-1s-7e, lcn.

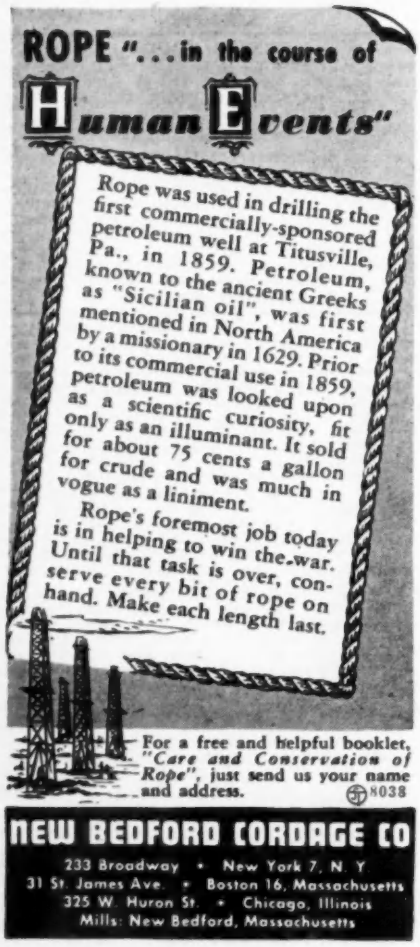
White County: Ben H. Nation's Young Bros. 1, nw nw ne 34-4s-8e, lcn.

INDIANA

Floyd County: Keisler & Albertson's City of New Albany 1, ne ne nw 1-3s-6e, dr.

Pike County: Bedford Dev. Corp.'s Schmidt 1, sw sw se 18-1n-8w, lcn.

Posey County: E. T. Win's Miller 1, nw se sw 26-6s-12w, lcn.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Mills: New Bedford, Massachusetts

WYOMING WILDCAT

Weston County—Failure: Frank Eblin Syndicate's Government 1, se sw nw 24-44n-63w, Mush Creek, Lakota 4030 ft, abnd 4800 ft.

Indiana Farm Bureau's Bauer 1, se ne nw 1-7n-13w, dr.

Vanderburg County: Sun's Adcock Unit 1, ne se se 23-7s-11w, lcn.

KANSAS

Graham County: W. L. Hartman's Stady 1, se se sw 2-8s-22w, lcn.

Greenwood County: K. T. Weideman's Riggs 1, nw sw ne 25-27s-10e, lcn.

Rooks County: Eldorado & Ed Swearer's Verveka 1, sw nw se 29-8s-19w, woc.

Rush County: Eldorado Refg. Co.'s Urban 1, nw ne nw 21-16s-17w, lcn.

Sedgwick County: British American's Petrie 2, nw sw sw 36-26s-17e, lcn.

KENTUCKY

Todd County: Hobesen & Putnam's Stinson 1, 13-D-29, dr.

Hobesen & Putnam's Glenn 2, 16-G-28, comp.

Union County: Cherry & Kidd's Sigler Heirs 1, 13-O-22, lcn.

NORTH LOUISIANA

Caddo Parish: Big West Drlg. Co.'s C. L. Ellerbe 1, 2000 fr nl 660 fr el 27-15n-12w, Cotton Valley test.

SOUTH LOUISIANA

Evangeline Parish: Magnolia's J. B. Morein 1, c nw sw 5-5s-1e, 6 mi s 3 mi e Pine Prairie fld, Wilcox test.

MICHIGAN

Arenac County: Michigan Oil Co.'s Dewald 1, se se nw 25-20n-6e, lcn.

Missaukee County: L. R. Reese's State 1, nw nw ne 19-23n-7w, dr.

MISSISSIPPI

Yazoo County: Carter's Allen Bridgeforth 1, nw se 24-12n-1e, lcn.

MONTANA

Liberty County: Texas Co.'s Leonard 1, nw se sw 15-33n-4e, Utopia, Devonian test, lcn.

Big Horn County: Marcus Snyder et al's Buzzetteri-Cortins 1, c Lot 3, 24-1s-32e, west end Hardin gas field, lcn.

Petroleum County: Schrock et al's Fifer 1, nw nw nw 21-15n-30e, east of Cat Creek field, Ellis test, spud.

NEW MEXICO

Eddy County: Culbertson & Irwin-Fred Turner, Jr.'s, McNutt 1, c nw ne 11-20s-31e, 3000-ft test.

J. D. McGurt et al's Maude Simpson 1, ne sw ne 20-21s-27e, 1500-ft test.

OKLAHOMA

Creek County: Ashland O&R Co.'s Morgan 1, se sw sw 1-18n-8e, spud.

Garfield County: Champlin Refg. Co.'s Myers 1, se nw 8-34n-3w, lcn.

Grady County: Ohio Oil's Harrison 1, c nw sw 29-3n-5w, lcn.

Murray County: Ashland O&R Co.'s James 1-A, nw ne se 29-2s-3e, fishing.

Okfuskee County: Big Chief Drlg. Co.'s Kennedy 1, sw se ne 4-10n-9e, rur.

Manahan Oil Co.'s Gragg 1, sw sw ne 13-11n-7e, lcn.

Pontotoc County: Allied Oil's Miller 1, se sw sw 28-3n-8e, spud.

Seminole County: Gulf's Dines 1, ne se nw 27-9n-7e, rur.

Stephens County: Texas Co.'s Meal 1, sw sw sw 22-1n-4w, lcn.

WEST TEXAS

Cochran County: Gulf's N. B. Hancock 1, outpost test 575 nsl 760 ewl of e½ PSL 5, blk L, 2 mi e by n of unnamed discovery, 5500-ft test.

Gaines County: Texas Co.'s Parmer County School Lands 2, 660 out swc lab 12, lge 317, Parmer CSL sur, rur for 5500-ft San Andres test.

Howard County: Hickok P. & D. Co.-Harry Reynolds' N. Read 1-H, se se nw T&P Ry. 16, blk 30, T-1-N, 4500-ft Clear Fork test.

WEST CENTRAL TEXAS

Callahan County: Harold G. Neely & Warren's Brown 1, 880 nsl 1760 ewl of w 160-ac of M. M. Potter sur A-253, lcn.

Jones County: R. H. Roark-L. F. Hooker et al's J. E. Manley 1, nw ne ne T&P Ry. 29, blk 14, 2100-ft test.

SOUTH CENTRAL TEXAS

Bastrop County: R. V. Muckelroy's Nettie Oshier et al 1, 1654 fr sel 1450 fr swl blk 5, Reuben Gage sur, 2000-ft test.

SOUTHWEST TEXAS

Duval County: Bennett Bros. Drlg. Co.'s J. F. Welder 1, 3324 fr wl sur 213, 330 fr s&ei n½ sw¼ sur, 720-ac lse, 3100-ft test.

Newman Bros. Drlg. Co.'s Mariano Benavides 1, 467 fr nw&swl 160-ac lse in extreme wly cor of sur 212, 160-ac lse, 5000-ft test.

Jim Hogg County: Harrison & Daubert's Guiterrez 1, 330 fr n&el 80-ac lse, TTRR sur 163, 2750-ft test.

McMullen County: Fred W. Shield's W. D. Glasscock 1, 330 fr wl 428 fr nl 320-ac lse, M. F. Lowe sur 16, offset Magnolia's Rhodes 1, 8000-ft test.

Webb County: Coastal Ref.'s Bruni Est. 2, 1650 fr sl 330 fr wl blk 72, Albercas Gr, blk 72, 577-ac lse, 2000-ft test.

LOWER TEXAS COAST

Jim Wells County: Slick Oil Co.'s R. R. Mullen 1, 1450 e ne at ra fr wl 229-ac lse 467 fr nl lse, 3080 fr nl J. Poitevent sur 207, 5800-ft test.

Kleberg County: Humble's D. J. Sullivan 1-B, 660 fr n&wl A&NW sur 19, 2097.35-ac lse, lcn.

Live Oak County: Ivey & Morgan's Wm. Hinnant 1, 660 fr ne&nwl 210.37-ac lse, Alex McDonald sur, offset Wright's Hinnant 1, 6000-ft test.

Victoria County: Prod. Service's Laura Adams 1, 467 fr nl 330 fr wl 204.5-ac lse, Allen Talbot sur, 6000-ft test.

Stewarts et al's Becker 1, 467 fr se&swl blk 36, Valentine Garcia, 274.81-ac lse, 7000-ft test.

UPPER TEXAS COAST

Brazoria County: E. Cockrell's Seaburn Est. Hrs. 3, 1200 fr nl 1200 fr nly/wl 2757.22-ac lse, J. E. Groce 5-Lge Gr, 6500-ft test.

Fabriguze & Dodd's R. C. Storrie 1, 330 fr el 2000 fr sl w 200-ac of Storrie Fee, J. E. Groce 5 Lge Gr, 6500-ft test.

Chambers County: Sun's Moore Est. 2, 467 fr n&wl sect 23 T&NO sur 23, 640-ac lse, 9100-ft test.

Ft. Bend County: A. P. George's T. W. Davis Est. 1, Big Creek outpost, 2550 at ra fr swl 1600 at ra fr sel J. J. Dickerson sur, 3440 n of nearest prod, 7500-ft test.

EAST TEXAS

Morris County: M. J. Delaney & Co.'s Earl Holt 1, 440 ewl 330 snl of 541.4-ac tr, Samuel Stewart sur, 3 mi s Daingerfield, rur for Travis Peak test.

Navarro County: J. B. Daniel et al's Mrs. Geo. P. Bounds 1, 330 out sec of 541.4-ac tr, or 7000 fr sel 5475 fr swl Martin Latham sur, 3½ mi se Richland, Woodbine test.

Rusk County: A. F. McMillan-M. Nathan's Kangerga Bros. 1, 492 fr snl 467 fr sel of 97-ac tr, or 492 fr m/w/nl 1900 fr ewl of Thos. Wood sur, mim for Woodbine test.

Tex Harvey Oil Co.'s S. N. Coleman 1, 330 nsl 2699 ewl of 604-ac lse, Mary Ables sur, ne edge Reklaw, lcn.

NORTH TEXAS

Archer County: Wayne King et al's W. S. Hale 2, 150 nsl 450 ewl blk 95, Harris sbdn, 1500-ft rotary test.

Clay County: Staley Oil Co.'s J. Schaffner 2, 1433 e 2358 n of sec blk 84, Byers sbdn, but in Alex McGowan-J. O. Butler sur A-219, 1500-ft test.

Cooke County: S. D. Johnson-Acme Die & Machine Co.'s J. F. Bundy 1, 140 snl 1300 ewl of P. P. Cady sur A-1239, dr 1070 ft.

E. B. Cox-Jake Hamon's W. O. Davis-Texaco 1, outpost test, 330 ft out nwc 295-ac tr, J. C. Johnson sur A-527, se of Sivells Bend field, rur for 7500-ft test.

Throckmorton County: Helmerich & Payne's B. Liles 1, 330 out sec sect 291, TE&L Co. sur, 5200-ft test.

Wichita County: D. J. White et al's W. P. Herron 1, 593 ewl 891 snl of e 160-ac of W. H. Taylor sur A-764, 2000-ft rotary test.

Young County: Bennett & Bennett's H. Hennig 1, 1716 snl 1050 wel sect 65, TE&L Co. sur, sd 1105 ft.

TEXAS PANHANDLE

Potter County: Indiana Farm Bureau Cooperative's W. H. Bush 1, c nw nw Gunter & Munson sect 6, blk M-19, 4000-ft test.

UTAH

Carbon County: Mtn. Fuel Supply Co.'s Farnham 1, ne se 12-15s-11e, Farnham gas field, 6000-ft test, cellar.

WESTERN CANADA

Central Alberta Plains—Vale Dome: Irwin Millner & Associates' Martin 1, se lsd 2 17-42-6w4th, dr.

Kansas Allowable Set

Kansas production for August was set at 275,000 barrels a day, unchanged from July, by the Kansas Corporation Commission.

SQUEAKS from the BULL WHEEL

Rules Are Rules

A conductor was amazed one night when he entered a Pullman car and saw a lighted lantern hanging on the curtain of an upper berth.

Summoning the porter, he demanded to know what the Sam Hill.

"Yes, sir, I hung that lantern there. The rules and regulations plainly state that it is the duty of the porter to hang out a lantern when the rear of a sleeper is exposed."

Badder the Gooder

"Salvation Army?" demanded the voice on the phone.

"Yes."

"Do you save bad women?"

"Certainly."

"Good, save me an' my buddy two for Saturday night."

Backslider, Maybe

"Professor, your hat is on the wrong way."

"How do you know which way I'm going?"

Save Hearse Rental

"How old are you?" asked the funeral director of the aged mourner.

"Going on 99."

"Hardly worth going home, is it, sir?"

How About Derricks?

"Mummy," demanded the little girl just returned from Sunday school, where the lesson had been on palaces in the sky, "Mummy, do they have skyscrapers in Heaven?"

"No, darling. They have to have engineers to build skyscrapers."

Poet's Nook

Old Mother Hubbard went to the
Cupboard
Her son was just home from the Fleet;
But when she got there the cupboard
was bare,
Gosh, how these sailors can eat.

This Curious World

Many a man keeps his nose to the grindstone so his wife can turn hers up at the neighbors.

An optimist is a guy who goes into a cafe without a dime and intends to pay the bill with the pearl he hopes to find in his oyster soup.

Mark Twain was the first man to remind a beautiful woman that she should wear clothes to decorate her charms—not hide them.

The sudden entrance of a wife has caused many a stenographer to change positions.

Obviously

"What happened to the little girl who went to the big city wearing those awful cotton stockings?"

"Nothing."

Modern Mother Goose

Three little pigs slipped into Emmett's emporium and lined up before the counter. "Make mine an Old Fashioned," grunted the first porker. "And mine a Tom Collins," squealed the second. "Gimme five quarts of beer," demanded the third.

"You don't want five quarts!" Emmett protested as he dropped his towel to stare at the imperious one. "You couldn't possibly drink all that beer!"

"It's plain you don't know who I am," indignantly retorted the third pig, thumping himself where his chest ought to have been: "I'm the little pig who went wee, wee, wee, all the way home."

Caught Dead to Rights

"Now tell the court how you came to take the car."

"Well, it was parked in front of the cemetery. Naturally, I thought the owner was dead."

Perfect Alibi

Old lady to little boy fidgeting in the seat next to her: "Why aren't you at school instead of here in the movies?"

"I got the measles, Toots."

Exit Grandfather

The following note was left by a man who had blown out his brains:

"I married a widow with a grown daughter. My father fell in love with my stepdaughter and married her—thus becoming by son-in-law, and my stepdaughter became my mother because she was my father's wife.

"My wife gave birth to a son, who was, of course, my father's brother-in-law and also my uncle, for he was the brother of my stepmother.

"My father's wife became the mother of a son, who was, of course, my brother, and also my grandchild, for he was the son of my daughter.

"Accordingly, my wife was my grandmother because she was my mother's mother—I was my wife's husband and grandchild at the same time—and, as the husband of a person's grandmother is his grandfather, I am my own grandfather!"

"Best Bet Yet"

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TRADING POST SECTION

ON PAGE 95 OF THIS ISSUE

MEN IN THE INDUSTRY NEWS

Col. Wilson G. Savelle of Houston has received the order of the British Empire Award. Colonel Savelle was associated with the Gravity Meter Exploration Company and the Torsion Balance Exploration Company before entering the service.

Lt. Col. Joe T. Dickerson of Houston, former general attorney for Shell Oil Company in the Texas Gulf area, has been released from active duty after three years of service in the Army. He will be located temporarily in Shell's New York office.

Philip C. Dixon, consulting petroleum and natural gas engineer, partner in and former firm of Foran, Boatright & Dixon, has opened offices in the Second National Bank Building, Houston.

Howard J. Klossner of St. Paul, Minnesota, former director of RFC, has been named vice president and director of The Chicago Corporation, parent company of Tennessee Gas & Transmission Company.

Buell O. Corkey, formerly of Buffalo, New York, has joined Kerlyn Oil Company at Oklahoma City.

James E. Fitzgerald, Borger, Texas, and **John E. Daxon,** Ponca City, Oklahoma, have been transferred to the Phillips Petroleum Company office, Oklahoma City.

Robert E. Lee of The Carter Oil Company, Tulsa, has been transferred to the Oklahoma City division.

George Flinchum and **Jack Wyatt** have resigned from British-American Oil Producing Company and have opened an oil field engine repair and machine shop at Oklahoma City.

Clarence F. Niessen has been named assistant sales promotion manager for Mid-Continent Petroleum Corporation at Tulsa. He formerly was eastern division sales promotion manager for the company at Terre Haute, Indiana, and has been with Mid-Continent since 1937.

O. F. Jolly, who recently returned from the Bahrein Islands, where he was engaged in construction work for Bahrein Petroleum Company, is now a sales representative for Oil Center Tool Company with headquarters in Houston. For ten years Jolly was field representative for *Petroleum Engineer Magazine.*

O. F. Jolly

Laurance S. Reid has been appointed professor of chemical engineering at the University of Oklahoma, Norman, Oklahoma. He was formerly assistant chief engineer for Southern Natural Gas Company. His duties will be divided between teaching and research. At present he is making studies on natural gas dehydration and other problems dealing with the the production, gathering and processing of gas-condensate mixtures at high pressure.

Laurance S. Reid

M. L. Arnold of Richfield Oil Corporation, has been elected president of the California Natural Gasoline Association, succeeding C. D. Gard of Union Oil Company. Arnold served as vice president last year. The new vice president is **M. W. Kibre,** General Petroleum Corporation. **George L. Tyler** was reelected secretary-treasurer.

A. W. Braithwaite, plant manager, and **W. T. Caldwell,** field engineer for George E. Failing Supply Company, Enid, Oklahoma, have resigned and formed a core drilling contracting partnership.

A. C. Fellinger has been appointed sales manager of power transmission machinery for Link-Belt Company, with headquarters at the company's Ewart plant in Indianapolis. He joined Link-Belt in 1916 and has been engaged since in power transmission. **H. F. R. Weber** will direct sales and application of silent chain drives and will also have headquarters at the Ewart plant. He became associated with the company in 1915 as a power transmission engineer.

V. W. Mitchell, formerly in the Shreveport district offices of Republic Supply Company, has been appointed assistant district manager with headquarters in Jackson, Mississippi. **J. B. Lionberger** is district manager at Shreveport and **T. C. Hendricks** assistant district manager for the territory west of the Mississippi.

W. J. Bornholdt has been appointed assisting purchasing agent for Caterpillar Tractor Company, Peoria, Illinois. He joined "Caterpillar" in 1928 as assistant chemist in the metallurgical department. In 1942 he was transferred to the subsidiary Caterpillar Military Engine Company at Decatur, Illinois, as chief metallurgist, which position he has held until the present time.

MEN IN THE INDUSTRY NEWS

Charles A. Powell, headquarters engineering manager for Westinghouse Electric Corporation, has been appointed chief of the Electrical and Radio Branch of the Allied Control Commission. He is taking leave of absence from his company and will fly to Germany soon. Powell will study the Reich's normal needs for electricity for the last 15 years. He will then survey the extent and nature of existing facilities and recommend to the commission a basis for future activity of the electrical industry in Germany.

Charles A. Powell

J. A. Watson of Houston Oil Field Material Company, Houston, is again supervising sales and service of Vickers hydraulic pumps.

C. W. Guyatt, formerly chief industrial engineer, American Steel & Wire Company, has been appointed assistant to **C. D. King,** chairman of operating committees, United States Steel Corporation of Delaware. Guyatt joined American Steel & Wire in 1935 as industrial engineer at Worcester, Massachusetts. He will assist in the establishment of production standards for all U. S. Steel subsidiary manufacturing companies.

Frank S. West, chief engineer in charge of gasoline and cycling plant design and construction for The Texas Company, will leave the firm August 15 to become affiliated with **H. S. Cole, Jr.,** former assistant to the manager of the producing department for The Texas Company. The West and Cole partnership will engage in gasoline and cycling plant design and consulting engineering in the field of gas, natural gasoline, and condensate recovery.

After September 1 West and Cole with Thompson-Carr, Inc., drilling contracting firm of which Cole is vice president, will have offices at 3503 Montrose Boulevard, Houston. They are at present in the Shell Building, Houston.

Harry C. Wiess, president of Humble Oil & Refining Company, has been elected to special term membership on the corporation of Massachusetts Institute of Technology, succeeding **Edward R. Stettinius,** former secretary of state.

R. L. Miller has been made sales manager of Norma-Hoffman Bearing Corporation's Western Division, succeeding **Carl W. Hedler,** resigned. Other promotions announced were **E. M. Beers, Jr.,** to assistant sales manager; **G. V. Titsworth,** assistant sales manager; **C. L. Brown, Jr.,** assistant to the sales manager; **W. G. Sargent,** manager of distributor's sales.

Deaths

Dwight G. Safford, superintendent of drilling and development for Stanolind Oil & Gas Company, died August 1 in Tulsa. Safford, 49, began his career in the oil industry with the old Midwest Refining Company at Salt Creek, Wyoming, in 1921, later joining the Eastland Oil Company in Texas, in 1929, and the Dixie Oil Company at Wichita Falls, Texas, until that company was acquired by Stanolind. He was a World War I veteran and served with the submarine branch of the Navy.

Edward Harvey Argue, pioneer Tulsa operator, died July 29 at Albert Lea, Minnesota. Argue, 72, resided in Tulsa for about 20 years before moving to Southwest Texas in 1939. He was one of the first producers to operate in the Glenn pool area.

Clarence L. Wingate, oil operator of Wewoka, Oklahoma, died July 30. Wingate, 57, was a native of Liberty, Kansas, and went to Tulsa in 1913. For 18 years he worked in the production department of the Prairie Oil & Gas Company.

Harry E. Preston, former Tulsa oil operator, died in Dallas July 30. He had lived in Tulsa for about 20 years before moving to Texas.

George Thomas Ready, 63, an employe of Humble Oil & Refining Company from 1919 until 1941, died August 1 at Texas City, Texas.

J. Henry Houze, 62 Houston construction contractor and oil operator, died August 1.

Charles Grady Crawford, 44, supervisor of material control department of Hughes Tool Company for 19 years, died June 29.

Abe Singer, 50, Tulsa oil man, died July 27.

John E. Shaffer, retired Tulsa oil operator, died July 24. Shaffer, 73, was a native of Oil City, Pennsylvania. He moved to Tulsa in 1907 and participated in a number of the state's early discoveries.

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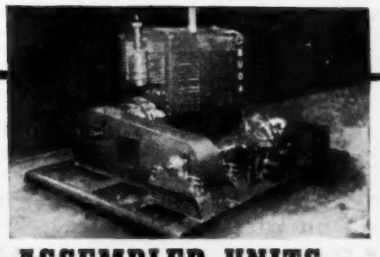

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NEW EQUIPMENT . . . LITERATURE

1—Clamp

Merrill Brothers, Naspeth, New York, has perfected a clamp for lifting light or heavy plate, barrels, stampings, welded assemblies, containers, or any metal with sufficient flat surface to enable the jaws

of the clamp to engage. The clamp is known as the Volz Flat Surface Lifting Clamp.

The Clamp has two definite clamping principles, one a pressure grip, the other a wedge grip. With these, it is said to be impossible for the load or article being held to slip even though it contains a coating of grease or oil. The clamp picks and holds securely, it is claimed, irrespective of position of the clamp when attached and lifted. It releases instantly and automatically when the load or weight is relieved from the grip of the jaws.

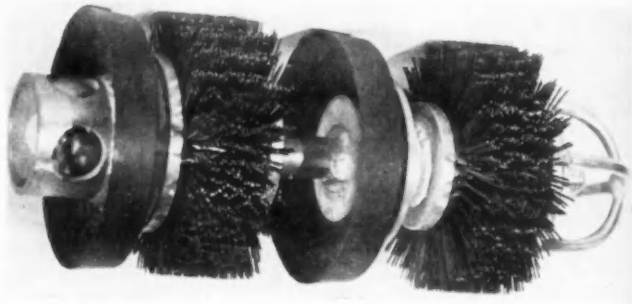
The cantilever basic principle actuates the one jaw. The stationary jaw is of special construction which makes for maximum wedge power and grip.

The clamp is made in four sizes, ½, 1, 3, and 6-ton capacities.

2—Pig

T. D. Williamson, Inc., Tulsa, has developed Type SC Pig for use in removing paraffin from large size flow lines and for cleaning transite and cement-lined salt water disposal lines.

The equipment is provided with an exclusive feature which permits a small stream of fluid to jet ahead of it, agitating and suspending in the stream solid deposits loosened by the wire brushes and synthetic rubber cups. Four outlet ports in the front end direct the by-pass stream toward the pipe wall. Scouring action of the brushes in removing paraffin, rust or mill scale is prolonged through many miles of cleaning because the brush outside diameter is greater than the pipe inside diameter. Consequently, brush bristles are bowed slightly when inserted in the pipe and tend to straighten as they wear, thereby maintaining effective cleaning pressure. The tapered lip of the rubber cup is



expanded by fluid pressure as its diameter is reduced by wear. The pig may be used for separating two dissimilar liquids as in batching or line-displacing operations. For this purpose a body cap is screwed on the rear end of the body to close the by-pass hole.

3—Pre-Cleaner, Deoxidizer

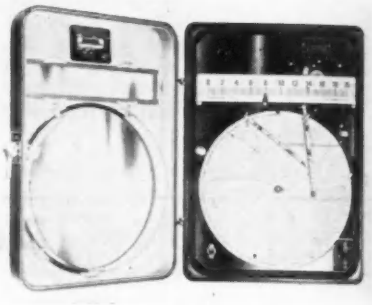
Optimus Detergents Company, Matawan, New Jersey, announces the Optimus Aluminum Pre-Cleaner and Deoxidizers. Their use permits the producing of low surface resistance on aluminum preparatory to spot welding.

Among the advantages claimed are a smut-free surface, oxide removed using a cold solution, negligible weight loss, minimum machine adjustment and minimum handling. Shop dirt, cutting oil, grease and identification paint are easily removed in the prescribed pre-cleaning operation.

In addition, the aluminum is placed in condition for Alrok treatment, anodizing and painting. With the use of the proper method all classes of alloys are easily handled.

4—Control Units

The Bristol Company, Waterbury, Connecticut, is offering a new series of electric-type potentiometer controllers. Five basic control unit types are available. Three are electric contact types to be known as the Microact controllers and the other two are Electric Proportioning and Current Input types. The control units are mounted on the internal panel of The Bristol Pyromaster Potentiometer Recorder and any type may be readily converted to any other type by following simple wiring and mounting instructions.



The three Mircoact units are provided with one, two, and three precision-type toggle switches, respectively, and six terminal board connection arrangements to meet a wide assortment of control circuit requirements.

Proportioning controllers may be used with any type of electric proportioning valve and may be had with resetting contacts if required. The Proportional Current Input Controller is primarily designed to provide close temperature control of electric furnaces and ovens.

The complete line is fully described with photographs, diagrams, and load wiring circuits in Bulletin PB1226, available from the manufacturer.

5—Oil Well Pump

Reda Pump Company, Bartlesville, Oklahoma, has added a new slim hole oil well pump to its line.

This new pump, designated as Series

Use This Convenient Coupon for Additional Information

Check below the numbers identifying items on which you want additional information. Mail coupon to The Oil Weekly and your request will be forwarded to the manufacturer.

THE OIL WEEKLY
P. O. Box 2608, Houston 1, Texas, U.S.A.

Please have manufacturers send me, without obligation, more information on items shown in August 6 issue of The Oil Weekly as checked below:

1	2	3	4	5	6	7	8	9	10	11	12
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In addition to information checked above, I would like more data on products or services advertised elsewhere in this issue by _____ Company

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375, is for use in "slim hole" casing—4½-inch outside diameter, 11 pounds per foot, 4-inch inside diameter or larger.

This unit, like the larger sizes, uses electric power applied at the pumping level in the well. A submergible electric motor is connected to a centrifugal pump in a single assembly suspended on the discharge tubing and submerged below the fluid level in the well. A cable transmits electricity to the motor, thus solving one of the most important and difficult problems of well pumping, that of economical and efficient transmission of power from the surface to the subsurface pump.

The pump will lift crude oil, fresh water or brine, may be run in crooked holes, can be made fully automatic in operation, and permits use of small tubing which may be protected against corrosion.

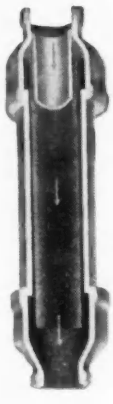
Lower first cost and lower operating costs are claimed.

Power can be supplied from public utility lines or from individual engine generators. The complete installation includes motor, protector, pump, cable, starting switch, and a full string of tubing of the size required for tensile strength and good flow efficiency.

The capacity range of the series is between 35 barrels per day with 500 to 9000 feet lift and 500 barrels per day with 500 to 3000 feet lift. The horsepower range is from ¾ to 21.

6—Check Valve

Harman Equipment Company, Los Angeles, has developed a check valve which is said to be an innovation in this type of equipment, known as the Permatite Valve.



The valve has no poppets, discs or other working parts. Backflow is checked by a Neoprene synthetic rubber tubing which offers positive control, as the tubing easily opens with either vacuum or pressure, permitting direct flow, and closes when the flow is stopped.

No manholes, sleeves or extractor equipment is required where valves are buried, as the tubing is permanently tight and its opening and closing movements prevent foreign matter from fouling the valve or causing leakage.

Laboratory tests for periods exceeding 24 hours show that, immersed in water, the valve maintains a 28-inch vacuum and acts as a check against back-flow under a static head of 29 inches without leakage.

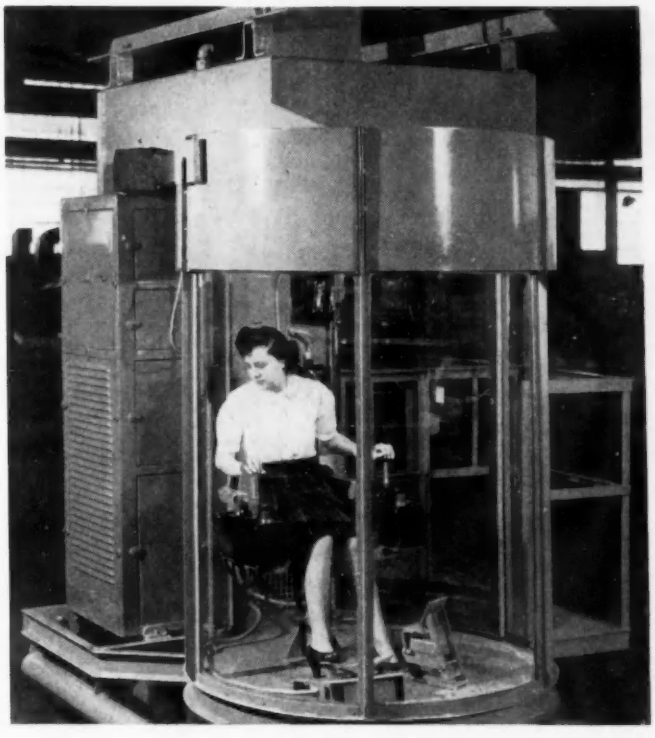
It is claimed that this valve can be successfully used with air, natural gas, petroleum products from crude oil to liquefied petroleum gases, hot or cold water and any chemical that will not attack synthetic rubber.

The valve may be used as a foot valve, vertical, horizontal or angle valve in any suction or discharge line. It also may be used as a mixing valve, pump priming valve or as an air compressor silencer.

7—Crane Cab

Cleveland Crane & Engineering Company, Wickliffe, Ohio, has developed a cab design for overhead traveling cranes which includes full vision for the operator, comfortable sit-down control and air conditioning.

Cylindrical in shape, the cab is modern in appearance. Corners or blindspots are eliminated. The transparent enclosure panels extend to the floor, permitting maximum vision in every direction over the area covered by the crane. The panels are of a new plastic which is shatter proof and impervious to certain gases common in many plants that may be injurious to glass.



With this cab, crane operation becomes an easy, sit-down job. Master switches especially designed for magnetic control are located for greatest convenience. Hoist and trolley switches are attached to the right and left arms of the chair. The bridge switch is on the floor and controlled with the right foot. Thus there is a definite control job for each of the operator's hands and feet, but none of his limbs need serve a double duty as in most conventional cabs.

An air-cooled air-conditioning unit, especially designed for this cab provides fresh air at any normal temperature desired and gives protection against objectionable gases, dusts and fumes.

A novel feature is the traveling platform which serves both as vestibule to the cab and a means for easy access to the entire exterior side of the window for cleaning purposes. Safety locks on both platform and cab door prevent operation of either except when platform is in proper position.

8—Nozzle, Tester

Buda Company, Harvey, Illinois, has a new model Universal Diesel nozzle and injector tester which is a portable unit designed for use with all popular makes of Diesel engines.

According to the manufacturer, no technical knowledge is required to operate the tester. Any mechanic or Diesel engine operator can measure injector opening pressures with it, determine accurate adjustment, check spray pattern for uniformity, and detect other irregularities such as sticking needle valves, dribble and leakage around valve seats.

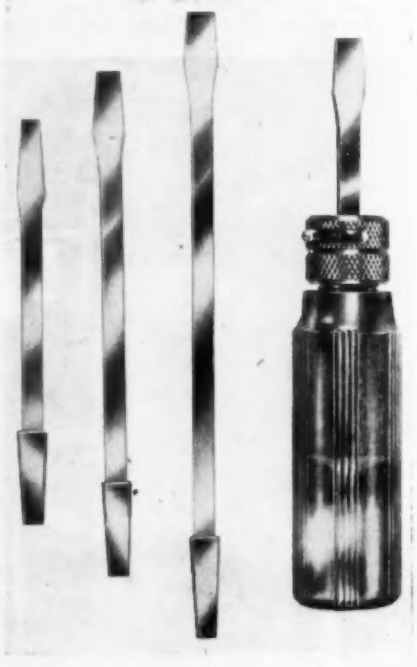
The tester is equipped with a standard hydraulic pressure gauge, 3-11/16-inch dial, 3000 pounds per square inch capacity and 100-pound gradations. Gauges of 5000 to 7500 capacity are also available.

Completely portable, the tester weighs less than 19½ pounds, including all-steel carrying case, one adaptor and removable 12-inch steel handle. The carrying case is 5⅝ x 7½ x 11½ inches and holds such extras as adaptor fittings, special cradle, and "popping" device, extra pressure gauges, risers, spray pan, high pressure lines and fittings.

9—Screw Driver

Speedway Engineering Company, Los Angeles, offers the Day Tool Driver, which solves the problem of a screw driver that will fit the job at hand.

The handle is made of durable plastic



with a simplified, alloy steel device that locks the blade securely in the handle, yet allows for its instant release by a flick of the thumb. Blades are drop-forged from high-grade alloy steel.

The tool comes in two sizes. The small size consists of a driver with simplified locking nut and four blades ranging from 1½ to 5½ inches in length. The large size consists of a driver with locking nut and four blades ranging from 8 to 14 inches in length.

10—Chart Drive Control

The Brown Instrument Company, Philadelphia, Pennsylvania, has a chart drive control which embodies means for automatically starting and stopping electronic recorder chart motion by pen position.

The chart drive cut-out, it was said, will be available for Brown's circular chart Electronik Recorder. Control contacts are wired in the chart drive circuit. By setting the control point the chart can be stopped and started as desired, corresponding to any pen position.

Literature

11—Pipe Line Pumping

Caterpillar Tractor Company, Peoria, Illinois, has released Form 9090 on "Power and Stamina for Pipe Line Pumping."

In words and pictures the booklet tells a story of pipe line pumping where stamina, reliability and economy are prime requisites. A number of typical Caterpillar Diesel power installations in pipe lines are shown. Also covered are the uses for this power in drilling, transporting, well pumping and servicing, well repressuring and laying of pipe lines as well as the importance of parts and service facilities of a widespread dealer organization.

Use the Coupon

For free copies of Manufacturers' Literature or more information on products described on these pages, use the convenient mailing coupon on page 100.

12—Rotameter

Fischer & Porter Company, Hatsboro, Pennsylvania, has published a third revised edition of "A New Era in Flow Rate Measurement," which discusses and illustrates the advantages of the rotameter for flow rate measurement. The basic features of the rotameter are discussed and explained as including high accuracy, wide flow range, ready visibility of the metering elements and fluid, and immunity to variations in viscosity and specific gravity.

13—Metal-Cutting Tools

Haynes Stellite Company Unit of Union Carbide & Carbon Corporation, New York, has published a catalog on Haynes Stellite metal-cutting tools. The catalog describes metal-cutting tools made from Haynes Stellite 98M2, and Star J-metal alloys. Included are descriptions, illustrations, engineering drawings, specifications, and prices for standard tools manufactured by the company. Among the tools discussed are square, rectangular, and round tool bits; boring and reaming blades; tipped tools and tool tips; grooving tools; cutoff tools; insert milling cutter blades; shell end mills; wear strips; and special tools. To aid those using these tools, the booklet includes recommendations for cutting angles, speeds and feeds for turning, boring and milling various plain and alloy steels, cast steel and cast iron, stainless steel, bronze, brass and aluminum. Full recommendations are also included covering paper grinding, brazing and silver soldering techniques.

14—Coated Abrasives

The Carborundum Company, Niagara Falls, New York, has published a booklet to acquaint coated abrasive users with the newly announced system for identifying coated abrasives. The booklet, "Sanding and Finishing," is an 84-page guide. Also there are comprehensive recommendations for the use of coated abrasive products in metalworking, woodworking, shoe and leather, floorsanding, printing, plastics, pipe and hat trades, specifications for belt sanding, belt splices and speeds.

Texasteel Observes Fourth Anniversary as War Plant

Texasteel Manufacturing Company, Fort Worth, is observing this month the fourth anniversary of the production of war materials.

A. J. Armstrong

Since July 3, 1941, the concern has been making 81 mm. mortar shells. The plant has operated day and night on a seven-day week for a total of more than 250,000 consecutive hours. Texasteel also has manufactured 60 mm. shells, anti-personnel mine projectiles, shell adapters and shell forgings.

Ninety-five percent of the company's facilities are engaged in war activity, with only five percent devoted to the production of electric steel sucker rods and sucker rod couplings.

"We'll go right on producing shells," says President A. J. Armstrong, so long as the government needs us, and in addition try to produce as many Texasteel electric steel sucker rods as our shell-making schedules will permit."

Mendel Keith Heads Oil and Gas Well Supply Association

Mendel A. Keith, general traffic manager, International Derrick & Equipment Company, Columbus, Ohio, was elected president of the Oil & Gas Well Supply Traffic Association.

Other officers elected are: First vice president, L. J. Prior, traffic manager, National Supply Company, Toledo; second vice president, F. R. Jones, traffic manager, Walworth Company, Kewanee, Illinois; treasurer, H. C. Wit, traffic manager, Jones & Laughlin Supply Company, Tulsa; secretary, C. R. Gartrell, traffic manager, Continental Supply Company, Dallas.

Oil Well Supply to Absorb Neilsen Firm of California

Oil Well Supply Company, United States Steel Corporation subsidiary, is to exercise an option for purchase of the assets of Neilsen Pump Company of California.

The main plant facilities of the Neilsen company are at 3204 Cherry Avenue, Long Beach, California, with a shop and warehouse at Taft, and stores and sales offices at Bakersfield, Huntington Beach and Ventura.

The company is owned by Karl P. Neilsen and Edward D. Storts.

Under the projected purchase plan, the company's assets will be organized into the Neilsen Pump Division of Oil Well Supply Company. It manufactures a line of sub-surface pumps and accessories.

Albert R. Zelt, vice president, Oil Well Supply Company, Dallas, said Karl P. Neilsen will remain with the organization as general manager of the Neilsen Pump Division.

CLIMAX FURNISHES AUTHORITATIVE ENGINEERING DATA ON MOLYBDENUM APPLICATIONS.

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- In fact, I am just about as efficient at this as the average sand pump or clean-out bailer is at cleaning out an oil well.
- Confidentially, if you want a real clean-out tool go to your nearest supply store and order the tops among all clean-out tools . . .

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- G-TYPE has solid steel plunger rod—exceptionally sturdy construction throughout.

Standard cable tool pin permits Jars and Sinker to be run above pump, eliminating fishing jobs.

- F-5 TYPE has patented plunger construction to assure highest possible efficiency in this type of pump.

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Other Patents Pending

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For additional information see COMPOSIT CATALOG, Page 1903
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Borg-Warner International Corporation, Chicago, has been appointed sales representative in all export markets with the exception of Canada and Alaska, for Tyson Bearing Corporation, Massillon, Ohio, Tyson manufactures tapered roller bearings.

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